An Excursion in Northwestern Mexico

ROBERT M. SENIOR

DURING the last few years the number of American tourists visiting various parts of Mexico has increased very considerably. As a result of this ever growing interest in our Sister Republic numerous books and magazine articles relating to it have been written, and a very considerable part of this literature relates to the flora of the country. This is indeed a rich field in which botanist and horticulturist might well delight to roam.

The influx of tourists in recent years is no doubt due to the automobile, together with the gradual improvement of the roads. In the last year, for example, a highway has been completed from the American border, via Monterey, all the way to Mexico City. This road, which at times traverses a country that is little above sea level, at other times attains an altitude of approximately eight thousand feet, and offers the sightseer an astounding variety of vegetation.

Many tourists who visit southern California and desire a glimpse of one corner of old Mexico are now in a position to extend their trip south of San Diego for a distance of about ninety miles into northwestern Mexico; for an excellent road now runs all the way to the village of Ensenada with its delightful modern hotel, and possibly the finest beach on the Pacific coast. The road itself often parallels the sea-shore, and at other times detours several miles inland to avoid some of the more precipitous mountains and cliffs that drop down to the water's edge.

Probably most tourists from the East who take this trip in northwestern Mexico find themselves entirely unfamiliar with the vegetation. It is a country over which the chaparral extends as far as the eye can see. During the summer there is almost no rainfall, and under such conditions one naturally expects to find a stunted growth of trees, shrubs and succulents. Here various low species of evergreen sumac,—the Lemonade Berry (*Rhus integrifolia*), and the Sugar Bush (*Rhus ovata*), with their sticky red fruit and bright leathery green leaves, greet the eye. These shrubs receive their common names from the fact that their flattish, half inch berries are covered with an oily substance which, when extracted, is used by the Indians and Mexicans, in the one instance to make a cooling drink, in the other, as a substitute for sugar. Intermingled with these sumacs, one often finds species of Ceanothus, with their bloom already shed. Various forms of scrub oak, such as *Quercus Palmeri,* with their rich evergreen leaves, at times form good-sized thickets.

Here the student and collector of succulents will find a most interesting flora. One of the most delightful of these types of plants is *Cotyledon pulverulenta* with a rosette that is often as broad as a large cabbage. This is sometimes called "Chalk Lettuce,"—not a particularly appropriate name, since the leaves in no way resemble that vegetable. The designation "chalk" is more appropriate, since

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Mountains in Northwest Mexico.

the thick rosette leaves are covered with a dense whitish powder that rubs off at the slightest touch. The plant frequently grows in the crevices of vertical volcanic cliffs where the greyish rosettes, in contrast to the dark brown rocks, form a striking picture. When in bloom the long leafy stem often rises to a height of three feet, with pedicels at the top bearing many narrow red flowers.

Near the sea shore the tourist no doubt will observe two plants that are very widespread along the coast. One is *Abronia maritima* with long prostrate stems, thick roundish leaves, and dark red flowers: the other is the "Ice Plant," *Mesembryanthemum cristallinum*. This latter plant bears small whitish or flesh colored flowers that are not particularly attractive: the interesting thing about the species is that it is covered with what has been described as crystalline-dewy vesicles which produce a glistening effect resembling frost or ice.

The summer visitor will probably be too late to see in bloom the stately creamy-flowered "Quixote Plant," or as it is often called, "Our Lord's Candle" (*Yucca Whipplei*), but he will nevertheless be impressed by the general appearance of the plant when in fruit: for, from a basal rosette of long bayonet-like leaves, there rises an erect stem, often twelve feet high, with a panicle of two inch greenish capsules dangling from their pedicels.

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Cotyledon pulverulenta on cliffs in Northwest Mexico.

This plant is said to be widely used by the Indians, who grind the seeds into flour, and also cook and eat the young flowering shoots.

Probably the reader will now have some idea of the type of plants which he will encounter in northwest Mexico. All in all, this is a trip decidedly worth while, both from a scenic as well as a botanical standpoint.

Units of Vegetation

R. S. Sturtevant, M.L.A.

The major role that vegetation plays in our landscape compositions is acknowledged. Its infinite variety of detail is appreciated. And yet—a review of easily accessible sources of information provides us with few accepted definitions of even a few of the various characteristics that plant materials in association may assume. We may wish to develop, consciously, variety of planting to give individuality to units of design that would be similar otherwise and we may do this not only by a change of dominance of species but also by changing to another unit of vegetation.

"Unit of vegetation" is a term used in ecology to classify the recognizable reactions of growing plants to a like set of climatic and edaphic conditions. We may have little concern with major units of tundra, prairie, or forest but, for permanence of effect in our artificial plantings, we must consider the minor units of vegetation and their value as seen from various points of view.

These units may be variously classified and though our first interest may lie in their height—their use as a foreground of the picture and hence below the level of the eye or as an enframement or background (above eye level), in planning we are more concerned with areas of sun or shade of varying size or with the transitional areas where shadows play. Hence the following grouping of my suggested units of vegetation:

Shaded

Group A. (Open to circulation).
Forest.
Grove.
Orchard.
Wood.
Coppice.
Group B. (Densely planted).
Specimen.
Thicket.
Hedgerow.
Shrubbery.
Group (Clump or Colony).

Shadowed

Park.
Bushy Pasture.
Marginal Plantings.
Garden.

Sunlit

Prairie.
Field.
Meadow.
Lawn (turf mown).
Glade.
Ground-cover.

In the consideration of our shaded units group A permits the development of minor units of design beneath a canopy of greater or less height and extent whereas the relatively small and densely planted areas in group B prevent circulation as successfully as they may prevent visual penetration.

Forest. The dictionary meaning "a large tract covered with natural growth of trees and underbrush—often with intervening spaces of open ground," corresponds to that of the "forest formation" used by the ecologist but only to a limited extent to that of the forester. A forest maintained or developed for commercial purposes may well possess beauty and frequently comes within the field of

landscape architecture. The "mixed" stand, if existing, I do not distinguish from a wood, whereas the "pure" stand is to be considered "forest" under my definition. Six to ten foot spacing of trees of one or a few species develops sufficient shade within a few years to discourage undergrowth. Only with age and thinning is an effective shaded unit developed and only by the addition of marginal plantings can we secure an interesting view from adjoining units. The "forest" may be an investment; it may give interest of texture as seen on a distant hillside but, unrelieved, it achieves monotony of effect.

Grove. A small tree-clad area especially when cleared of underbrush becomes a grove, a design unit wherein we may wonder whether the trees are regularly or irregularly placed. The canopy is well above our heads and our view is broken only by the tree trunks. The term is rarely applied to immature growth as much of the dignity of the term depends on the size of the trunks and the evenness of the canopy.

Orchard. A regular spacing of fruit or nut trees which rarely attain the height of a forest tree offers opportunity for attractive vistas and may, with age, develop a partial canopy. For beauty we need high-headed mature trees and a carpet of turf while the commercial grower requires cultivation and low-heads in most cases. Proper spacing tends to develop a broken canopy and fairly regular alternations of light and shade.

Woods. Typically this presents itself as a sample of forest of mixed species each with its respective light requirement. The result is layers of vegetation. The uppermost canopy is thin enough to permit smaller trees to develop a lower canopy and they in turn veil the light required by shrubs, herbs, and mosses. The infinite variety of light and shade, of texture and seasonal aspects makes a wood delightful. The opportunity is great whereas the difficulty is one of both execution and maintenance.

Coppice. Such a "wood of small trees" lends itself to the development of shaded walks and naturalistic plantings under a low canopy and with an almost immediate effect. The frequent use of a coppice instead of the regulation shrub bed might well be advised both as a screen and as a shaded accessible unit of design. It requires intensive development but little space.

We may now consider the more usual densely planted shaded areas which, in practice, tend to become long and narrow—hence well-suited to restricted plots.

Specimen. A single plant so placed as to allow its normal growth full opportunity for development becomes a specimen whereas one or more plants, selected and arranged for a certain symmetry or what-not of design might well be designated as *accents.* Accents may be allowed normal growth or may become topiary as the composition suggests, and either the natural growing specimens or the restrained accent plants may be placed in rows to line an avenue or allee, thus bringing rhythm into our composition.

Hedge. A geometrical line of vegetation is necessarily formal in effect. If dense, of even texture, and trimmed to regularity of form it provides excellent enclosure and background and occupies the least space of any unit of unsupported vegetation. Its value in design lessens as plants become less regular growth and vanishes when the line thus planted seems out of character with our picture. The

appearance of an enclosing hedge must become a very minor element in the arrangement of a lawn picture and even a line of plants becomes overconspicuous in a naturalistic setting. Good maintenance seems essential.

Thicket. This, in nature, may present the density of a hedge but its tangle of twigs often interwoven with vines presents a most varied texture. The silhouette tends to monotony but the surface offers much seasonal interest and its shelter suggests its use as a bird sanctuary. Well-handled an artificial thicket should require a minimum of care and develop a maximum of interest.

Hedgerow. A mixed planting such as we find along old fences offers a most picturesque precedent for plantings within narrow limits. An actual hedgerow is in a constant state of transition from grass to larger herbs, shrubs, trees, vines, and shade enduring occupants and, in reproduction, we must foresee their needs. In silhouette and in foliage spread there is as great variety as in the list of available plants.

Shrubbery. A collection of shrubs of varied heights and habits each relegated to its respective place presents a textured screen and like the thicket tends to an even sky line. Even when well done it remains almost wholly artificial in its monotony and seems fitted only to the adornment of broad sweeps of turf while its use on the small place frequently suggests so-called "landscaping."

Group. This seems a rather unsatisfactory term for an "island" of planting. If it were of trees we might resurrect the old English term "hurst," if of shrubs the term "clump" and in dealing with certain species (as with sumac) the word colony suggests much. Their frequent visual isolation from other plantings is to be deplored and it is unfortunate that we have so little data as to the natural forms assumed in plan by natural vegetation.

Shadowed Units of vegetation occupy areas in transition, ecotones as they are called by the geologist. They are present wherever nature is in the process of re-establishing her predestined dominance. The early stages of weeds and brambles, even that of shrubs and second-growth trees interest us but slightly but where her progress has been partially obstructed by animal life certain phases present what we have come to consider beautiful compositions and we may attain similar results by intention.

Park. Though pre-eminently an English term applying to the enclosed and pastured areas beyond the pleasure grounds we have become familiar with its wide stretches and "walks" of turf studded with groups and specimens of great trees. Even our "intervales" suggest no greater dignity and peace. In the pastured park the horizontal grazing line on every tree adds harmony of line but, in the beginning, unfortunately, our park is merely a field spotted with saplings.

Bushy Pasture. This unit or rather this group of visual units is typically small in scale and at its best in New England, where the red cedars pyramid above rounded masses of hawthorne or wild rose. Even on flat ground the open areas are of interest in shape and may be broken, in season, by touches of color. Turf and varied ground covers form the floor; there are spreading masses and colonies of shrubs (thorny and berried ones predominating) and, in their shelter, small trees develop while everywhere the junipers and certain evergreens have repelled the nibbling beasts. The establishment and main-

tenance of such picturesqueness offers little difficulty. It is not formal nor unassisted, does it provide a screen, but it is achieved by a minimum of varied plantings carefully located.

The English (or Nantucket) "Commons" would be a more pleasant term but does not suggest the exclamatory accent of a red cedar. Chapparal, sage brush, and desert scrub are similar transitional developments though they offer a very different pictorial effect in their respective climates.

Marginal Plantings. Where rich alluvial soil gives way to ledge or gravelly moraine, where changing water levels produce alternations of dry and wet, even where man clears his way through the natural forest pictures develop but they reveal no unity of character if considered in detail. Exposure, soil, climate, all play their part and we recognize perhaps only the lush mounded masses along a stream or meadow as worthy of emulation.

It has seemed advisable to adapt a term in ecology rather than to adopt the usual "Inclosing Plantations" which indicate placing on plan rather than a unit of vegetation of any marked character.

Garden. Man-made and maintained design units where varied vegetation plays its part. Our flower borders, our turf panels, pleached alleés, and parterres, our special collections of this and that may all include plant materials but they possess little permanence as units of vegetation. Nature is in opposition to our purposes even more than in a naturalistic or less varied planting.

Sunlit Units of vegetation, in nature, characterize areas that are deficient (or over-supplied) in some element necessary to optimum growth. We may find water or desert, lichen covered rocks washed by swift waters or winds, trees dwarfed by wind or cold, and littorals where conditions change too speedily to permit much growth. Man may drain or flood. He may improve the soil content or provide shelter from wind or weather. But he can preserve neither the pictorial character of a wind-torn tree nor the even growth of wind-swept heath without resort to tools and constant effort.

Prairie. Though a recognized grassland formation of vast extent I suggest the term as suitable in application to any area not yet overgrown with woody material. Any denuded plot of ground develops vegetation of sorts and frequently possesses one or more seasonal aspects of real beauty. Control, however, seems impractical and such units, especially in close vicinity to house or pleasure ground are rarely designed.

Field. "A piece of ground set aside for tillage or pasture," in other words, a treatment of areas for other than design purposes which produces alterations of seasonal aspects of most uncertain value. However fascinating cloud shadows on a checkerboard of distant fields may prove a nearer view is to be avoided at many seasons.

Meadow. Areas of turf whether in the open or in groves or orchards and even if not regularly mown as in a lawn may still present delightful foregrounds for distant vistas. Normally the first cutting prevents seeding but permits of the ripening of bulbs naturalized in the grass and the second cutting is late enough to allow for the flowering of summer weeds. This preserves a predominance of green as against the ripening and stubble of a hayfield.

Lawn. Frequently mown turf even if not free from weeds reveals every modulation of the ground and presents a finely textured foreground for the

majority of our compositions. It is unfortunate that the requirements of sun, good soil, and good drainage cannot always be provided where we need such finish.

Glade. Occasionally we think of a glade as being carpeted with turf but often it is fern-clad and shaded and almost invariably it is relatively small in actual area. The mossy glade is most difficult of achievement and we are more accustomed to the use of ground-covers in large colonies that are less pleasant to walk upon.

Ground-cover. A catch-all of a unit that is intended to include not only the delightful carpeting of a forest floor but also the convenient marginal fillers used at the edge of shrubberies or the seasonal aspects of bulbs strewn in profusion. Ground-covers are far more prevalent in natural units of vegetation than they are in prepared plantings and yet, when once established, they reduce the cost of maintenance and greatly enhance the effect of other units. Nature abhors bare ground and we might follow her example to advantage.

To summarize the ground covered by these various units of vegetation; the forest, grove, orchard, wood, and at a smaller scale the coppice will develop a canopy of foliage that permits shaded units of design. The thicket and hedgerow are naturalistic screens, the hedge and shrubbery more finished products while the specimen (accent) or group are merely decorative. Prairie, field, meadow, lawn, glade, and ground-covers all fall below eye level and join with the natural heaths and marshes as being in each case rather difficult problems both in establishment and in maintenance.

The shadowed areas of park, bushy pasture, marginal plantings, or garden are excellent for design use but essentially transitional in character. We seek to establish a certain picture and then seek even more earnestly to preserve it at its best. With money we can get an immediate effect, with care maintain it. With patience we can achieve an effect in time and let the balance of climate and soil, air and water maintain what we have initiated.

R. L. Taylor

Magnolia virginiana × *M. grandiflora*

A New Hybrid Magnolia

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IT was shown in June, 1930, that sweetbay, *Magnolia virginiana* L., and the southern magnolia, *M. grandiflora* L., could be crossed even though their chromosomes numbered 19 and 57, respectively. In this first attempt, four flowers were pollinated, resulting in four fruits which produced 77 seeds. These seeds were sown in ordinary garden soil, and all of them decayed except five, which made strong plants. One of these five was killed, accidentally, after it had been set out-of-doors. The remaining four are still growing well, but they have not produced flowers.

In June, 1931, nine more pollinations were made. The nine resulting fruits produced 176 seeds, which in turn resulted in 121 plants. These were set out in the nursery at the National Arboretum, Washington, D. C., in the spring of 1933. At this time, facilities for watering plants at

the nursery had not been completed, and drought destroyed a number of the seedlings. However, 77 plants have survived drought and other injury, and four of these plants bloomed for the first time this spring. Although the seeds were produced on the sweetbay, all of the plants resemble the pollen parent. The flowers are intermediate in size between the parents, and have a pleasing fragrance. They appear normal, except that the anthers contain no pollen. It is probable that the pistils are sterile, and that pollination with either of the parents will not produce fruits. Tests for sterility can not be completed until a larger number of the seedlings have flowered.

The pollinations producing both the 1930 and 1931 series of hybrids were made on a large specimen of sweetbay which grew on the grounds of the Department of Agriculture, in the Mall. This tree was later moved to West Potomac Park, near the Potomac River, where it soon died. Pollinations were made with the use of unopened buds (but which would be open within 24 hours). The buds were forced open, however, by pulling back each sepal and petal until the pistils and stamens were exposed. The stamens were carefully removed with tweezers, and the stigmas were covered with pollen collected from a handsome specimen of southern magnolia growing in Lafayette Park. The flower, together with its supporting leaves, was then covered with a paper bag fastened to the branch with a paper clip. After five days, when these bags were removed, the stigmas were found to be dark brown, or black and hardened. Three partly opened flowers with stigmas tinged brown also had been pollinated. These failed to set fruit and soon turned yellow and dropped off.

Three months were required for the development of mature fruit. Seeds of the 1931 series were cleaned from the pulpy seed coat and sown in peat moss between two layers of cheese cloth. With this method, the seeds could be examined frequently with minimum disturbance. Germination began in five weeks and continued for about nine weeks. As soon as each seed had formed a root tip about half the length of the seed, it was transferred to a thumb pot containing a sandy loam. This transfer was made carefully, with tweezers, to prevent injury to the germinating seed.

These hybrid magnolias are similar to seedlings of the southern magnolia, not only in general appearance, but in variation. The leaves vary from oblong-lanceolate to broadly ovate, and on one of the plants, part of the leaves are retuse. Some of the plants are vigorous; others appear stunted. The better types have dense foliage, yet some are too thinly covered to be of horticultural interest. Hardiness, also, has proved variable among the seedlings. Some were injured during the two severe winters of 1934-35 and 1935-36, but no injury occurred during the past winter, all of the plants retaining their foliage. It is expected that some of the seedlings will prove hardier than the southern magnolia, for although the plants lost their leaves during severe winters, many of the best specimens showed no twig or bud injury and grew normally the following spring, developing a heavy coverage of foliage.

It is hoped that these magnolias with their 4½- to 6-inch flowers will prove worthy garden subjects beyond the range of *Magnolia grandiflora*. Experiments in propagating some of the better seedlings are to be conducted this summer.

Some Texas Flowers: Their Distribution; Legends, Families, Adaptability and Culture

ELEANOR D. BENNERS

IN the preparation of these notes on native Texas plants from different sections of the State, it has been recognized that such would of necessity be rather sketchy; and that brevity should be the aim, however difficult, on so broad a subject.

The writer must give much of credit to "Texas Wild Flowers" (Ellen D. Schulz) and to "Legends of Wild Flowers" (Mancey Richardson Ransome) for certain source material.

Elsewhere will be found detached descriptions of certain popular summer blooming plants, and notes as to their various characteristics and requirements.

In a State with altitudes ranging from sea level to 9,500 feet on one of its mountains (Guadaloupe Peak), with a rainfall of from fifty inches in an eastern county to less than ten in the extreme west, climatic *means* favorable to many different kinds of plant growth must be taken as a matter of course.

Shivering on snow and ice-covered plains in the Panhandle while we gather sub-tropical fruits and flowers at Christmas on the extreme southern boundary is—Texas! A State of magnificent distances, and one boasting a richer flora than that of any other in the Union.

A flora so widely and lavishly distributed under different environmental and climatic conditions that there is much of value to be shared with other States in the same latitudes or wherever gardeners with imagination and a spirit of adventure may be found.

It is to be admitted that "adventure" is perhaps used advisedly, since the moving of plants successfully, from west to north Texas even, is not always a foregone conclusion with the most expert; but with some assistance, in a provided *similar* or *congenial* soil, Nature has a way of adapting her children to new conditions. Texas soils vary greatly and in some counties nearly every type (except saline) may be found.

As has been suggested, "plants as a whole adapt themselves to definite environment" and when an east Texas native is found flourishing in a particularly happy spot in the west, it means logically that an unusual amount of water has been supplied, most likely by an irrigating channel.

East Texas provides ideal conditions for the growth of many plants, shrubs and trees requiring acid or sub-neutral soil; with its sand and clay subsoil, a greater rainfall, general conditions are favorable to the growth of such things as holly, dogwood (*Cornus florida*), magnolia, swamp plants, *Azalea nudiflora*, and one native iris, a member of the Hexagona group. (Parenthetically I must add that the Louisiana iris species thrive, with proper care, as far west [and further]as this Dallas district, in what is known as North Texas.)

Along highways, and on hillsides, always there is a variety of bright color, according to the season.

Growing inland from the coast, one finds abundant growth in great areas of "Bee Brush," known locally and

written of as Chaparral (*Aloysia ligustrina*) with its insignificant but delightfully fragrant white bloom and from its name an attraction for bees.

West Texas has an astounding wealth of plants growing on its gravelly hillsides, its limestone cliffs, in cracks and crannies, that would delight the heart of any rock gardener. The enormous Cactus family must here be recognized only as one of these subjects.

On these arid and semi-arid hillsides are found annuals, biennials, and herbaceous perennials. These carpet the earth with springtime beauty; a beauty made more wonderful by blooming shrubs and shrubby trees in numbers; deciduous, and evergreen.

This wealth of bloom is supposed to come, each in its own season and environment, unless perchance, by a happy accident one member of a family has, intentionally or otherwise, gone a visiting and decided to stay!

Outstanding amongst these travelers are two members of the Gentian family; i.e.: Texas Star (*Sabbatia campestris*) and the widely acclaimed and much sought after Texas Blue Bell (*Eustoma Russelliana*), than which there is none more beautiful amongst wild flowers.

Both of these are in demand as cut flowers and conservationists must "do something about it," else only in private gardens will they be found, particularly the Eustoma.

It is not to be inferred that our Texas wildings are evenly distributed; nor that propagation in some cases is too easy or too difficult—since there are peculiarities of soil requirements even amongst members of the same family, notably that of the Spiderwort.

Aside from differentiating requirements in the same family there are those, entirely temperamental, in that bloom appears only after a heavy rainfall. Some of these are: rain lilies (*Cooperia pedunculata*), senisa (*Leucophyllum texanum*), and retama (*Parkinsonia aculeata*). These flower regularly after heavy rains, while the Evergreen sumac and our Mountain laurel (*Sophora secundiflora*) blossom regularly in the spring, and *again* in the fall if late rains are plentiful.

Contrariwise, there are those that live and blossom on limestone hills, and in chinks and crevices, utterly oblivious to the weather—notably the exquisite Mountain Pink (*Erythraea beyrichii*) which roots in pure limestone.

All plant life and bloom, everywhere except in the tropics, is subject more or less to frost damage under certain conditions—but in a State where we may swelter one day, shiver and shake the next, annuals are either early or late, fine or poor, depending upon moisture and warm nights. Again, the coolness or warmth of the nights, with the amount of rainfall, have an influence in plant and flower production. For instance, there are years when great sweeps of blue bonnets (*Lupinus texensis*) cover the hillsides; others when, notwithstanding abundant rains, there are very few flowers of this to be seen.

For an untold number of years, Texas was the home of Indian tribes, and with its greatly diversified flora, it is natural that practical uses were made of many plants, and that plant legends abounded.

Certain plants were of food value only—such as the common cattail (*Typha latifolia*), the creeping rootstocks of which were gathered, dried and pounded into flour between stones. Bread from this flour was rich in protein—equal to that of rice or corn flour. Mrs. Schulz termed the cattail

a "Giver of Gifts in Nature's Theatre." The retama was "Moses' Burning Bush," afire, but not consumed. The beans of this plant also were made into flour from which bread was made by the simple process of mixing the flour with water and baking it. The least appreciated use of this plant was for its medicinal value in the treatment of certain ills of mankind.

It is said that, before the importation of whiskey into Texas, the beans of the beautiful evergreen shrub, Mountain Laurel (*Sophora secundiflora*), were ground into powder for use in Mescal, an intoxicating liquor made from the Century plant. A half bean making an Indian gloriously happy, followed by days of deep sleep; while a whole bean would send him to the Happy Hunting Ground!

Legends

Indian Blanket (*Gaillardia pulchella*). Briefly, this legend tells of a little Indian maiden, deeply devoted to her father, who played around the feet of her mother while she wove a brilliantly beautiful blanket for her warrior husband, who as Chief of the tribe had gone with his braves on the war path. The mother and child constantly prayed to the Great Spirit for the father's safe and heroic return from battle.

As all Indian children were, the little girl was fond of birds, insects and flowers. One day while chasing a beautiful yellow butterfly, she ran too far into the woods. Finally, failing to find any landmarks to point the way out, she, weary and sleepy, but unafraid, sat down in the clearing. She had been taught to pray to the Great Spirit, and with implicit faith she now asked him to send the beautifully colored blanket, that was her father's, to protect her from the cold during the night, and fell asleep.

The next morning when she opened her eyes, she found herself almost covered with flowers of the same bright hues as the blanket. Never before had such flowers been seen in the land. Soon she heard the voices of her father and other braves and quickly reached his side, exclaiming, "See father, the Great Spirit heard my prayers and when I asked for your blanket to keep me warm during the night he sent these beautiful flowers, the color of your blanket." From that day on, *Gaillardia pulchella* has been called Indian Blanket.

A Blue Bonnet Legend

There are several legends giving the origin of this native Texas flower which makes of the hillsides in early spring, great sweeps of blue; curiously, each has to do with some form of sacrifice. The favorite one is as follows:

"Once upon a time in the land of the Comanche tribe of Indians, a terrible flood visited them, and was followed by a long drought, then by bitter winds, and snow and ice. All the game was killed or driven to warmer climates. The Indians were dying of cold, hunger and disease.

The medicine men and chiefs of the tribe had prayed to the Great Spirit for relief, but he seemed not to hear their prayers.

Finally relenting, the Great Spirit made known to the bravest of the chieftains that he would break the pestilence and heal the sick, but for this he would demand a burnt sacrifice of their most precious possession, after which the ashes of the offering must be scattered to the four winds. This message was received with saddened hearts and grave faces by the council of braves and medicine men.

Away on the outer edge of the council sat a little girl, the daughter of the bravest chief. Hidden in the folds of

her dress was her doll, made of fawn skin with braids of long black horse hair. Upon the doll's head was a gay colored head-dress decorated with the most beautiful feathers to be found —those of the jay bird.

To this little Indian girl, her doll seemed to her the most precious possession in the whole tribe—for did she not love it as a mother loves her own baby!

Long into the night a voice seemed to repeat "The most precious possession in the whole tribe." These were the words of the Great Spirit.

Her duty to her father, and her people was clear. Finally when all was still, she crept out into the night, and holding close to her little body the beloved doll, she went up the hillside. Upon this hill, she made of her doll—a burnt offering to the Great Spirit—to the god of her people—that they might be restored to health and plenty.

Scooping up the ashes, she let them sift through her fingers, and the Wind Spirit scattered them far and wide.

The next morning in the place where the fire had been, and covering the hillsides where the ashes had fallen, was a beautiful blanket of flowers colored like the gay head-dress of the fawn skin doll—"the Texas blue bonnet"—State flower since 1901.

Texas Plants Notes

Louise B. Belsterling

Leucophyllum texanum (Meaning white leaf)—common name *senisa*—a native grey-leaved shrub, bearing lilac to purple two-lipped tubular flowers in the leaf axils, immediately after a rain. The simple alternate leaves are covered with hairs. The shrub grows on the hillsides of Southern and Southeastern Texas but has proven valuable material for home gardens where it is most effective against dark green shrubbery. Though surviving in dry weather, in limy soil it flourishes and blooms abundantly when given plenty of water and retains its foliage in our normal winter cold (18° F.), but the plant revives after a temperature as low as 4°.

(*Tecoma stans*) *Stenolobium stans angustata*—yellow elder, is hardier than the type, has survived after an occasional temperature of 4°. The shrubs die down after frost, but the growth is rapid and thick, making good backgrounds and screens. The leaves are bright green, pinnate, deciduous. The plants bear large, showy terminal clusters of butter-yellow trumpet-shaped flowers. Seed pods are linear with many flat winged seeds, which usually germinate in five days. The seedlings will bloom the second year, the flowers appearing in the Dallas district in July, lasting until frost—about November. Rich lime soil with weekly soaking produces a six-foot, dense shrub in my Dallas garden.

Gentian, *Eustoma Russellianum* (meaning wide mouth) Texas bluebell. This is one of the loveliest native flowers in the State although it is also found in moist prairies from Mexico to Colorado and Louisiana. It is es-

pecially abundant in Southeast Texas where the florists gather it in great quantities as it is an excellent cut flower, lasting for days, even in our hot climate, and new buds open in fresh water. The flowers grow singly or in clusters on a wiry stem, are two to three inches wide of various shades of blue-purple. At the base is a half moon of deep maroon purple and the stamens and style are yellow. The bloom resembles the Platycodon. The plants are erect branching and reach a height of two and one-half feet. The fruit capsules are oblong, containing many minute seeds, similar to those of petunia. These seeds germinate naturally in swampy land, which later dries out to a hard cake, but the tap root goes far down to water. The blooms appear about the first of July lasting until late in the fall, especially if pods are kept clipped. The plants will flower the first year from seed sown in December, but the wealth of bloom comes the second year, after which the plant dies, but I have had clumps the third year. If the seed is sown in pots set in water, there is no trouble with germination; transplanted to pots when second leaves appear, then put in permanent position in the garden, when two to three inches high, the *tap root* is more easily kept intact. Natural habitat in lime soil. It is a temperamental gentian, but what a joy when successfully raised to its full beauty!

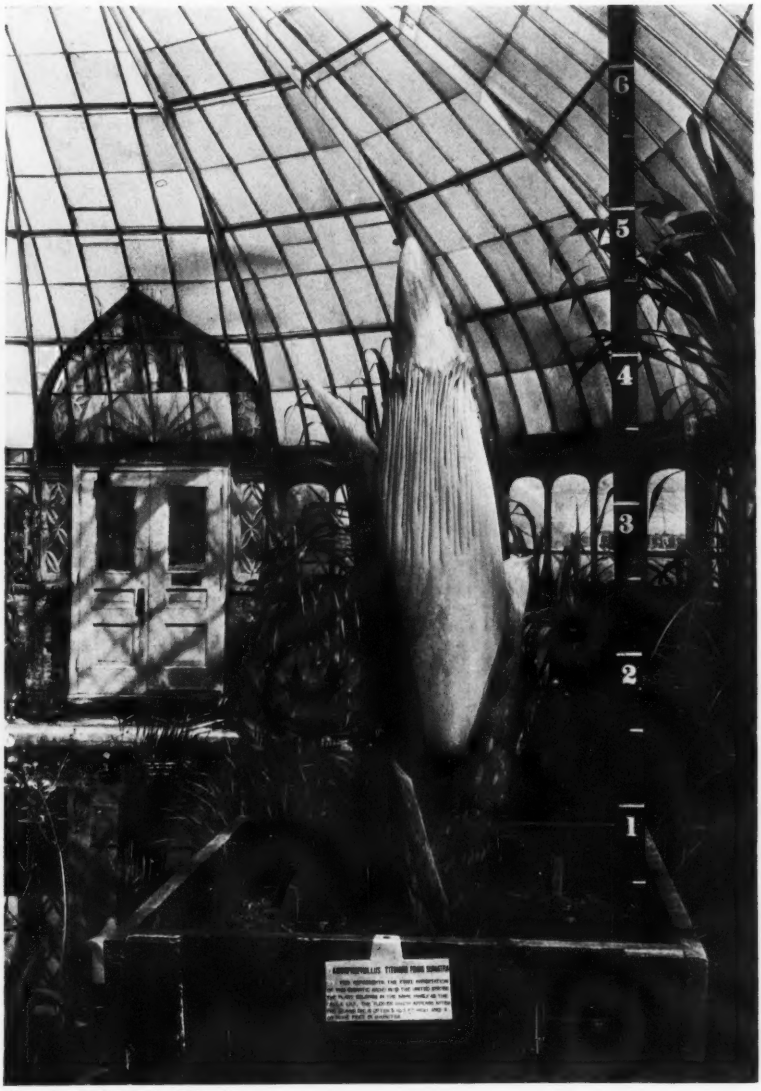
Machaeranthera tanacetifolia (Tansy Aster or dagger flower). Among Texas' many native rock plants of great garden value, is this tansy aster, blooming from May to November. It is from ten to twelve inches high, bushy with fern like leaves, and covered with lavender daisies, having yellow centers. The seeds are sown in the late fall, germinating into small seedlings, which live through the winter and begin blooming in May. The spring sown seeds also do well, coming into flower by fall. Ordinary garden soil.

Melampodium ramosissimum, (rock daisy or mountain daisy). This is another fine rock plant from our native, limestone slopes. It has many branches from a black, woody stem, forming a dense rounded mound, one to two feet across. It survives drougt, but after abundant rainfall, is covered with heads of small, sweet-scented white daisies with yellow centers. With frequent watering, the bloom is almost constant from June until December. Of course, in this Dallas district of North Texas, our season is about six weeks to two months earlier than New York.

New York Botanical Garden

Amorphophallus titanum

First flowering in America, May 27, the day the flower broke through the sheaths.

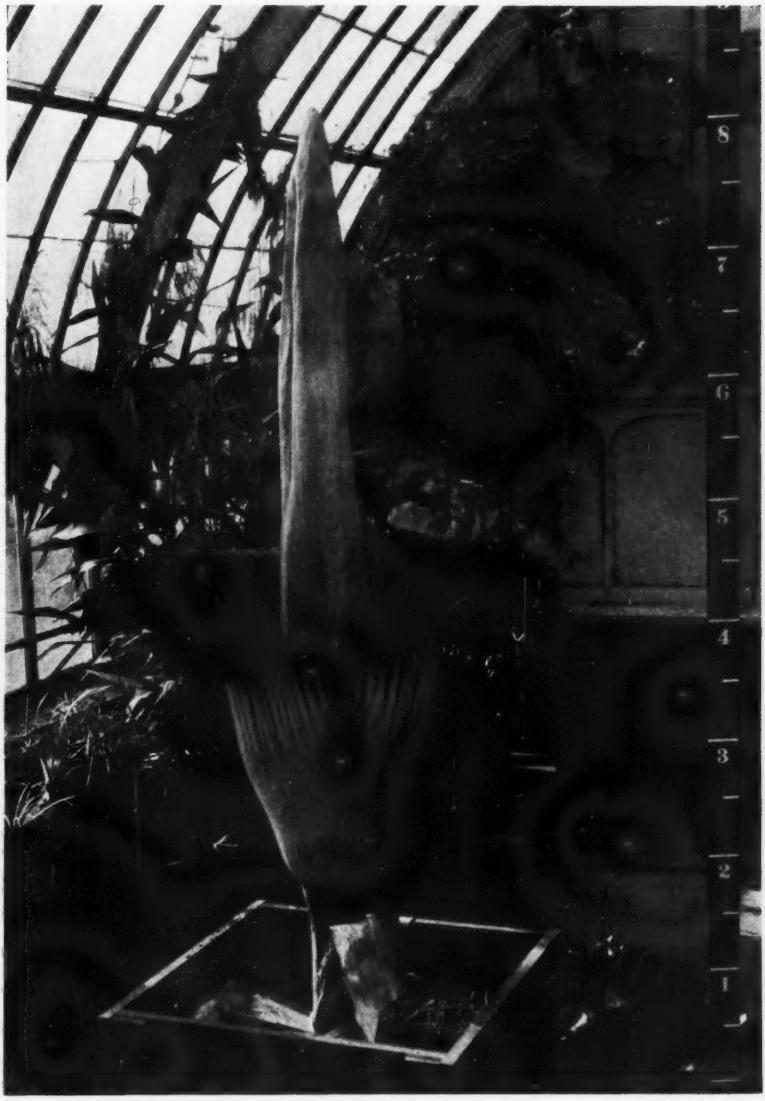


New York Botanical Garden

May 30, with the flower well beyond the sheaths.

New York Botanical Garden

June 3, approximately two feet of growth of flower; sheaths failing.



New York Botanical Garden

The fully expanded flower.

Tulips for Permanency

ALFRED BATES

NOWADAYS one often hears gardeners complain that tulips are an expensive luxury in comparison with other plants; and some have even ceased to grow them, calling them "flowers for only the rich who are able to renew them every year or so." There are some grounds for this contention. If a splendid display of large, tall stemmed, uniform flowers is desired the bulbs must be lifted after the foliage has yellowed, allowed to ripen, sorted over to discard all but the largest size bulbs and new ones purchased to replace the discard before replanting in the autumn. This all means time and money; more money than many gardeners can afford to spend. In other gardens another method is followed; the tulips are left in the ground until the flowering is poor and negligible—usually in the third year—and then the bulbs are dug up, thrown away and a fresh supply bought. This also is costly when compared with daffodils, irises and other garden plants which go on for years with increasing bloom.

That this is a modern predicament I am sure. For I can remember old gardens in my childhood where tulips bloomed year after year without an annual lifting and certainly no replenishing. In our own garden I do not recall that they were ever lifted and I do remember that they flowered yearly. Perhaps the bloom was not so large as the modern flowers but it was equally effective in the garden. I distinctly recollect a brownish blend with a strong nutty fragrance which grew in a country garden of a friend of the family, of which bulbs were promised me when "they became too crowded." For many years flowers of this variety were sent me each spring but we moved east before the bulbs were lifted and separated so I never received that tulip. Then I recall a garden in Western Pennsylvania where tulips — this time I was dealing with named varieties of Darwins, Cottages and Breeders—were planted in 1910 and were still blooming well when I last saw them in 1921. And they had gone through the war years when they certainly had had no attention paid them; nor had they ever been lifted. Of course the blossoms were somewhat smaller than those of newly planted bulbs but they were more graceful in that the stems were not so stiff and the mass of bloom was greater. As I had kept no record I can not make positive statements as to the number of increase nor report such varieties as had died out; but I do remember that *Dream, Suzon, Vitellina* and *Bouton d'Or* had formed splendid patches of color — I am sure of this because these have always been among my favorite varieties.

By the year 1921 gardeners had thoroughly adopted the advice of bulb catalogs and were lifting tulips after the foliage began to die down. When tulips are used in beds by themselves, especially in parks and in other public displays where a uniform height and size of flower is demanded, this method of yearly renewal is necessary. But the gardener who has planted clumps of tulips in a mixed border or at the edge of shrubbery, and is willing to wait until they can adjust themselves to the conditions of their new home, need not find them a costly luxury if

he will but treat them fairly.

Remember that the modern garden tulip—both early and late flowering—is a very complex hybrid. It was a hybrid when in 1554 it was first introduced into Western Europe from the gardens of Constantinople; and it was a hybrid of long standing even then, for the Turks had been crossing it for centuries. How long it has been crossed and recrossed we do not know; nor do we know what species were used in its parentage. But we do know that almost all species come from climates which are hot and dry in summer and where the soil has a strong lime content. And we also know that for centuries bulb growers have lifted their tulips annually to grade them into sizes to sell and sizes to replant for future sale. And that the bulbs are very heavily fed in order to mature them into large, flowering size as rapidly as possible. And also their propagation is forced in order to increase the stock as rapidly as possible; this often weakens the constitution of any plant, for the intensive cultivation which is necessary to produce, at the same time, both numerous offspring and large saleable bulbs taxes the vitality of the plant. This has affected even the oldest varieties, for during the World War vast numbers of bulbs were destroyed in order to use all available ground for the growing of foodstuffs in the bulb growing countries. After the war when these areas were returned to bulb growing the stocks were small and intensive propagation had to be resorted to.

It is unreasonable to expect a bulb with such a history to settle down readily and continue to flower when placed in a new environment. Four centuries of constant crossing and heavy food is enough to ruin even the hardiest constitution. But the tulip has not been ruined. And this fact shows that it is a more rugged and a hardier bulb than we are in the habit of considering it. But we must give it time to recover; and cultivation and food while it is doing so.

Against the hue and cry of yearly lifting—and yearly loss—I turned a deaf ear; and will continue to do so, for a twelve year test proves to me that my contention is correct. But before presenting the record a few general remarks are necessary. One can not expect to have quite the same huge size of flower or height of stem which the heavily fed, carefully prepared new bulb produces. One must also expect one or more barren years when a whole clump or even the entire collection is flowerless or almost so. And there may be some complete losses, where all the bulbs of a variety will die out; but I doubt very much that this will occur if the bulbs are well cared for during their period of adjustment to garden conditions. There will also be some "breaking," although I have not had as many "breaks" as I expected. And one must plant the bulbs where they will be sheltered from strong winds in order to prevent injury to the foliage. Great care must be taken not to break or bruise the leaves when weeding or cultivating the ground about the plants. And both fertilizer and lime must be stirred into the soil yearly.

Explanation must here be made as to why so great care should be exercised to prevent damage to the leaf or stem. The life of a tulip bulb is for one year only; it blooms and forms a new bulb for the next season. The food which is stored in the bulb produces the flower and the leaves, which in turn form the food which is stored in the new bulb for next year's bloom. But beside this new and large bulb, one or more small ones may also be formed. So it will clearly be seen that

any damage done to the leaves will reduce the size of the new bulb or bulbs. If the whole stem is broken there is little chance of a new bulb being formed. There is also another reason to avoid damage to the foliage; the dread disease called *fire* can only enter the tulip through the bruised or broken surface of the leaves.

The Trial and Results

In the autumn of 1925 sixty-seven varieties of late flowering tulips were planted with the intention of leaving them to fight for their existence. However, at that time, I did not expect the trial to be so severe as it eventually became, for I had intended to give them yearly cultivation and food. I might say here that this is a week-end garden and often the week-ends spent there are several weeks apart. During my absence spasmodic attention is given to weeding by a general-chore man who is an excellent worker—but no gardener.

The garden itself is located in southern New Jersey. It had not been cultivated for more than a dozen years and was covered with coarse grass. When we started to dig in late September we found a strata of very compact coarse sand and gravel which was as hard as concrete but was porous enough to drain off long heavy showers within a few hours. This subsoil is so close to the surface as fifteen inches, in some places, and never deeper than twenty-four inches. It is so compact that the roots of shrubs and flowering trees seldom penetrate it but grow out horizontally when they strike it, with the result that a larger area of the top soil is robbed of food than would be the case if the roots could grow down. As we had neither the time nor the money to use for the breaking into this hard-pan we were forced to dig the top soil only and place the inverted sods on it while spading. At this time a liberal quantity of bone meal was worked into the soil.

The shrubs, bulbs and perennials in these mixed borders were planted over a period of several week-ends. The tulips were planted by digging out the whole of the area to be given a variety to the depth of eight or nine inches and then pulverized sheep manure, one large handful to each six bulbs, was thoroughly mixed into the soil at the bottom of the hole and pressed down. Soil was then added to bring the level to six inches below the surface, a layer of sand spread over the area and the bulbs set on the sand at about eight inches apart. Then the soil was filled in to within a couple of inches from the top, pressed down and given a thin sprinkling of sheep manure before adding the rest of the earth.

No fertilizers were applied until August of 1927, when about half an inch of commercial humus was worked into the soil of the entire garden. And in November a half inch coat of sheep manure and bone meal, in equal parts, was stirred into the ground. Then at Christmas the border was given a thin dressing of lime.

The spring of 1929 showed a definite decrease in the amount of bloom and also in the size of the flowers. Some of the clumps, especially those where the growing shrubs gave an increasing amount of shade, had decreased in number, not even sending up the single leaf which shows the bulb is still alive and growing. This decrease was due to careless weeding and cultivation, for I could find tulip leaves and whole stems in the compost pile when during my prolonged absences the ever-industrious choreman had made a thorough cleaning.

In the spring of 1930 the tulips were a sorry sight indeed. There were few

flowers and those few were pitifully small and a great many of them were deformed. That summer more humus was added and during the late autumn bone meal and lime in equal parts was lightly stirred into the entire garden.

The spring of 1931 was even worse than the preceding one. The tulips were so poor that a friend who is a Dutch bulb grower renewed the offer he had made in 1930, to replace all my tulips with fresh bulbs and also do the work of digging out the old ones as well as the replanting. He was very indignant when I refused his offer and assured me that tulips could never be a permanent garden plant. But in spite of his discouraging remarks and the miserable flowering I was quite hopeful, for there were dozens upon dozens of the large wide leaves which indicate that the bulb will flower the next season. So while the leaves were still growing I stirred into the soil a mixture of humus and sheep manure, equal parts, and added some lime over the loose earth. It was quite a job to do it while the foliage was growing and not damage any of the leaves.

Some observations must be made at this time. Notes show that *Cottager* was the only one still doing well. From the dozen bulbs planted in 1925 there were thirty-eight blooms. This variety was the only one which had continued to increase and to flower yearly. During the summer several bulbs of various sizes were given to a friend and when I saw it this last spring in his garden it was a mass of bloom. However, my clump has gradually decreased because an ivy was planted over it and as the ivy has increased in size, robbing the soil and depriving the bulbs of sun heart, the tulips have slowly died.

Bouton d'Or, Rev. Ewbank, Dream, Lady Stanley and *Painted Lady* had all disappeared by this year. As they were all planted where by now they were constantly shaded by a lilac and by a rose arch, I am confident the lack of sunshine was the cause.

In the spring of 1932 the tulips had recovered to so great an extent that my friend the Dutch bulb grower accused me of having replaced many of the varieties. In the autumn more fertilizer was applied but notes fail to state what it was. This was during the depression and the garden suffered until the autumn of 1935.

However, a few notes taken during this period must be given: "1934, *Faust* and *Mr. Farncombe Sanders* show signs of breaking at edge of several flowers"; "1935, *Faust* and *Mr. Farncombe Sanders* show no signs of 'breaking' this year; Louis XIV, twelve fine flowers and four good ones; *John Ruskin* and *Crespuscule* splendid masses of bloom; *Moonlight*, twenty-one fine flowers — cat-fight broke off all stems and single leaves." And that was the end of *Moonlight* and several of its neighbors.

No fertilizers were applied from 1932 until November, 1935, but no weeding was done while the tulips were in leaf, as the choreman's services had been dispensed with. Therefore no foliage had been broken during this time. In November of '35 a liberal application of blood and bone was worked into the soil; of course this was too late to benefit the tulips for their spring bloom. During a thaw in late March when the tulips were about three inches tall lime and bone meal, half and half, was stirred into the soil. Again in November of 1936 blood and bone was applied and in December some old lime which had been in the tool house for several years was added.

Record of Spring of 1937

In the following notes an attempt is made to grade the bloom; splendid,

meaning almost as large flowers as from newly planted bulbs; fine, meaning flowers almost as large and good, meaning a degree less. Only the best comeback is listed but there are many other varieties which are making a good showing with a few scattered blooms and many large wide leaves. When flowers are "breaking" they are so noted, otherwise it is to be understood that they are perfectly shaped and colored. Increase from one bulb has been as many as six flowers, three large wide leaves which indicate the bulbs will flower next year and seven small leaves to show small bulbs which will flower in future years.

Dom Pedro — 12 planted; 18 fine flowers and several large leaves.

Cardinal Manning — 6 planted; 22 good flowers and three large leaves.

La Merveille—6 planted; 13 good flowers and many small leaves.

Old Times—3 planted; 9 fine flowers, several large leaves and many small ones. Four of the flowers were rather streaked as though "breaking."

Crepuscule — 12 planted; 20 fine flowers and 3 which showed a tendency to "break" at edge of one or two segments; several large leaves and a great many small ones.

Suzon — 12 planted; 12 splendid flowers and ten large leaves with many small ones; had foliage badly damaged in 1933.

Mr. Farncombe Sanders—12 planted; 9 splendid flowers and six large leaves with many small ones; had foliage broken in 1933 when half the planting was damaged.

Mrs. Moon — 12 planted; 12 fine flowers and 3 which were flushed with red; eight large leaves and many small ones; foliage damaged in 1933.

Faust—6 planted; 15 splendid flowers, several large leaves and many small ones. In 1934 both *Faust* and *Mr. Farncombe Sanders* showed a tendency to "break" yet in the last three springs it has not appeared.

Semele—6 planted; 8 fine flowers and six large leaves.

The Fawn—6 planted; 10 splendid flowers and six large leaves with many small ones.

Clara Butt — 12 planted; 18 fine flowers and 2 slightly "broken" ones; several large leaves.

Bacchus—12 planted; 16 good flowers and several large and many small leaves.

Elegans Alba—6 planted; 10 fine flowers and 4 which did not mature. No extra leaves.

Vitellina—12 planted; 9 fine flowers and four large leaves with many small ones. Was damaged and several bulbs were cut when transplanting iris several years ago.

Avis Kennicott—6 planted; 5 good flowers and 3 which had a slight flame of rose in center of segments; three large and many small leaves.

Apricot—6 planted; 5 fine flowers and four large leaves with a great many small ones.

Panorama—3 planted; 5 fine flowers and three large leaves with many small ones.

John Ruskin—6 planted; 10 splendid flowers and four large leaves with no small ones.

Louis XIV—12 planted; 2 splendid flowers and five large leaves and some small ones. This planting in 1935 had 16 fine flowers but that year most of the foliage was damaged by cats; it also has to struggle through a thick mat of *Achillea millefolium.*

In 1930 the end of one of the borders was turned into an addition to the rock garden and all the bulbs were removed and given to a neighbor; they have bloomed finely ever since. In the building of the rock garden from ten to twenty inches of soil and rock was placed over the level of the old border.

Several tulip bulbs were missed and in the following spring came through and bloomed. They must be down about eighteen inches but they have come up and bloomed every spring since; but have no increase. The blossoms have always been large and the stems strong; they are far better than any of the same varieties in other parts of the garden. They are *Hammer Hales, Vitellina, Moody* and *Duchess of Hohenberg.* May this not indicate that tulips need a much deeper planting than is usually given them?

Conclusions

From the above results I venture to draw the following conclusions. Tulips must be planted much deeper than we are in the habit of doing. They must be planted where they will be sheltered from strong winds which would damage the foliage and great care must be taken when working among them. Annual applications of fertilizer and lime must be given them. They must receive full sunshine, especially while maturing their foliage and making the new bulb for next year's bloom.

Deep planting. Those few bulbs which were overlooked when the addition to the rock garden was made and must be about eighteen inches deep have given perfect flowers regularly for seven years but have made no increase. In the rest of the garden the best results have been in two areas where, owing to an alteration in the contour of the yard, several inches of soil was added to the border. In these areas the flowering has been excellent and the increase has been fair. In the rest of the borders where the bulbs are presumably at the six-inch depth the increase has been large but the flowering has not been so good and the comeback has been slower. Therefore I venture to suggest the planting of the bulbs ten inches deep in heavy soils and twelve inches deep in light ones, measuring from the base of the bulbs. And in all cases resting them upon a half inch layer of coarse sand.

Damage to foliage. The utmost care must be taken to prevent any bruising, tearing or breaking of the leaves or stem. From the prevailing spring winds tulips must be sheltered by buildings, hedges or shrubs. Animals must be excluded from the garden more zealously while the foliage is still green than at any other season. Great care must be used when cultivating the soil. It would be far better to leave the earth hard and compact until after the foliage had died down than to run the risk of hurting it while working the soil. And when cutting the flowers for the house do not cut them with more than one leaf if you want sure results the next spring; it would be even better to cut above the top leaf.

Sunshine. Tulips in partial shade make a delightful garden picture but will not last for many years. It is important that they receive as much sunshine as possible not only upon the foliage while growing but also upon the soil at that time and for a month or so after it has died. This is to ripen the bulbs thoroughly. Therefore heavy ground covers are to be avoided. Some of my losses are due to the use of ivy, *Achillea millifolium, Alyssum saxatile, Arabis, Cerotostigma plumbaginoides* and verbena over the bulbs. Where such light growing plants as annual linarias, California poppies, Swan River Daisies or larkspurs and cornflowers, set out in late June for autumn bloom, have been used I have noticed no harm. The close and continuous shade of shrubs has exterminated such old varieties as *Bouton d'Or, Leghorn Bonnet, Philippe de Commines, Painted Lady, Inglescombe Pink* and *King Harold.* That this has not been due to the roots of the shrubs

is proven by the fact that *Cardinal Manning, Dom Pedro, Crepuscule* and others are as close to the shrubs *but* on the southern side and receive full sun throughout the whole of the day.

This past spring in a Virginia garden I saw tulips which had been in the same spot for four and five years. Where they were growing in full sun or in only slight shade they were a splendid mass of bloom. But where they were in slight sunshine the flowering was poor in size and scattered. All the bulbs were mulched with old cow manure each autumn, so it could not have been that the shaded ones had less food.

Annual fertilizers. The easiest time to apply foods is in the late autumn when there is little in the garden above ground and the fertilizer can be thoroughly worked into the soil. The food is then ready for the tulip roots in the spring. Another good time is early in the spring before the tulips are higher than a couple of inches; but there is always the danger of breaking some of the points which have not yet come through the soil. If great care is taken not to injure the leaves a good time would be just as the flowers have fallen. Summer applications are almost useless, as the other plants in the border will receive most of the benefit and very little food is left for the tulips when they need it in the spring.

If I were in constant attendance at the garden I would prefer to follow a schedule such as this: the first November after planting stir into the soil an application of blood and bone and follow it up in January or February with a light sprinkling of lime—not quite covering all the earth. It should be remembered that I do not mulch my garden for winter protection. Then in late March or early April carefully stir into the soil while cultivating the ground a handful of bone meal to each dozen bulbs. In the second November work in an application of commercial humus and pulverized sheep manure, mixed in equal parts, and follow with lime and with bone meal as in the year before. From then on I would alternate the blood and bone and the humus-sheep manure combination each November and continue the annual light sprinkling of lime. While I have never used it myself, I should think an application of some liquid fertilizer at blossoming time would be of great value, provided no liquid was allowed to get on the foliage. I am confident such a schedule would prove efficacious because of the manner in which my very much neglected tulips have responded to such fertilizations as I have given. And I am equally sure that with a regular and persistent treatment, such as I have been unable to give, there would have been no barren years and the bulbs would have settled down in the new environment much quicker and with much less loss.

As a closing argument in favor of the long life of tulip bulbs let me give this interesting story. Growing in full sun in the lawn of an old Virginia mansion I saw two clumps of tulips this spring; one was a yellow not unlike the old variety *Flava,* at least as I remember it, and the other a deep red which might have been a form of *Gesneriana;* not one of the dozen or so flowers in each group was "broken." The eighty-eight year old mistress of the place told me—and she has a remarkably clear memory, as all her friends can testify—that her oldest sister had made a garden where these tulips grew a few years before the Civil War. During the war period the garden was neglected and later the box hedge which surrounded it was removed and after earth had been added

to bring it to the level of the surrounding ground—it had been in a slight hollow—it was given over to grass. The tulips which I saw were a part of that old garden and my hostess assured me that they had bloomed every year. At first there were many of them as well as crocuses, daffodils and hyacinths. But, she says, they gradually died out until about forty years ago she stopped cutting the grass where they were growing until the leaves had died. Since then these two clumps and some crocuses near them have slowly been increasing without the aid of any fertilizers. She kindly offered me some of the bulbs but I suggested that I wait until I could dig them myself when dormant, for I am very anxious to know at what depth these bulbs are growing. I accept this story completely, as my friend clearly remembers when and from whom each plant in her garden was obtained.

Adrien Boutrelle

The prize winning exhibit of Zenon Schreiber at the spring show of The American Rock Garden Society, New York, 1937.

Ideas Behind Japanese Flower Arrangement

IKKO GREGER

IN these pages I shall try to give an account of the ultimate purpose and psychologic background of the artistic arrangement of flowers. It may be true that many of my readers will feel that the horticultural aspect or the technique of flower arrangement is a more fitting subject for printing in a horticultural magazine. Although I concede this, there is for most lovers of plants and flowers an aspect of emotional or artistic satisfaction which extends far beyond the mere growing of beautiful specimens or the technique of arranging them into a harmonious, artistic unit. There is also a human aspect here, as in any other human activity, little noticed and little discussed, for what reason I do not know, unless perhaps because it is too elusive, too emotional and not to be measured with a yardstick. But this human aspect is of great importance and in the hope of making a small contribution toward its more general recognition I venture to tell you of certain of its phases.

To illustrate what I want to say, I shall freely make use of my own experiences, not because I consider them of general significance, but because they may help to clarify your own experiences which I hope will fill out your understanding.

My own education in this respect started when I set foot on Japanese soil about twelve years ago for a continued stay of nine years. Life among a strange people with a strange language is usually a severe shock to a person raised and bred in a definite setting, with the result of loosening up the tightly bound particles which compose a character. This open frame of mind, once achieved, is a great asset in the search for the new, the interesting, and the great things that are freely given if they are wanted and that may be assimilated in any background.

My fate was to become deeply interested in flower arrangement in particular during my first year in Japan. A friend entertained me on a gray day in autumn at her home, such a day when any spirit sinks low, and my own was terribly homesick as well. As I watched the graceful movements of the Japanese lady in putting the flowers together I recognized for the first time the perfect harmony presented by the human being and the flowers in their setting in the house. Two little hands produced unfalteringly before me not only an exquisitely harmonious arrangement of flowers, but also an almost visible harmony between their owner and the flowers.

In the years since then I have taken my time to assimilate this matter of Japanese flower arrangement. I have lived with it and practiced it daily for many years in Japan with my Japanese teachers and friends. I am still living it and practice it at least a few times daily here with my American friends and pupils. So let me tell you what I have found out about it.

For the first few years in Japan I could not find out anything at all about flower arrangement, except that I liked the arrangements my teacher made, not my own, though I felt I might some day do as well as any of her students and that the *"sen,"* the line, was a serious matter to the Japanese. Painters talked about line, architects pointed to lines, persons had line and Mt. Fuji had the most exquisite simplicity of line.

Tulips and primrose.

Line then became a serious matter to me, because one day it dawned on me that I had been made highly sensitive and conscious of an indescribable elegance, which nature repeats again and again in her earthly designs, an elegance no matter which way it was put into effect by human hands, was always used with success.

A little interlude of self-importance always seems to come along with this first stage of progress. You can always quite easily find human beings who, for instance, have really never seen a tree. They saw a tree trunk perhaps. Some saw bark, some the top, the leaves, the buds or a bird on a swinging branch. One feels rather sorry for them and loves to tell them about the grand rhythm of a tree, which expresses itself in every branch in its special habit, its growth lines. its composition as a picture.

But before long this very elevated phase ceases and a Japanese master's pupil begins to apply his alertness of observation not only to horticultural and floricultural objects, but to the whole universe, only to become aware that the ego's "I" is a very insignificant bit in a whole changing world full of humans, animals, plants, rocks and rivers, mountains, oceans and skies.

Therefore with the manual training with flowers comes a development of one's own self into a specific part in the universe, into a being which itself is able to link up logically with its surroundings, making the best of all the given opportunities for the sake of the whole, being conscious and proud of it.

Hands become adjusted to handle delicate flowers, until the more or less conventional designs, which the master first teaches you get into your fingertips. I might say that if you have reached this phase, you may stop there, should you please.

You may do over and over again the pleasing designs which you have learned for Spring, Summer, Autumn and Winter arrangements and for some length of time everyone does. Every student does so in Japan until some outside influence causes thinking in new patterns and creates an urge to use whatever creative ability nature has bestowed. That again is done so in Japan, daily.

This is one way to explain the various schools on flower arrangement in Japan, the constant change in effects, the introduction of new ideas.

Once I traveled from Tokyo with an expert on Japanese archery. I had felt that a man in Japan who was an archer did not take this sport for the sake of shooting an arrow into his target. "No," he said, "it is only a healthy means to become awake, alert, a potential human being worthy to be called beautiful of heart. To shoot the arrow is but a mechanical practice. To become a great archer, well I believe you have got to become a grand fellow first."

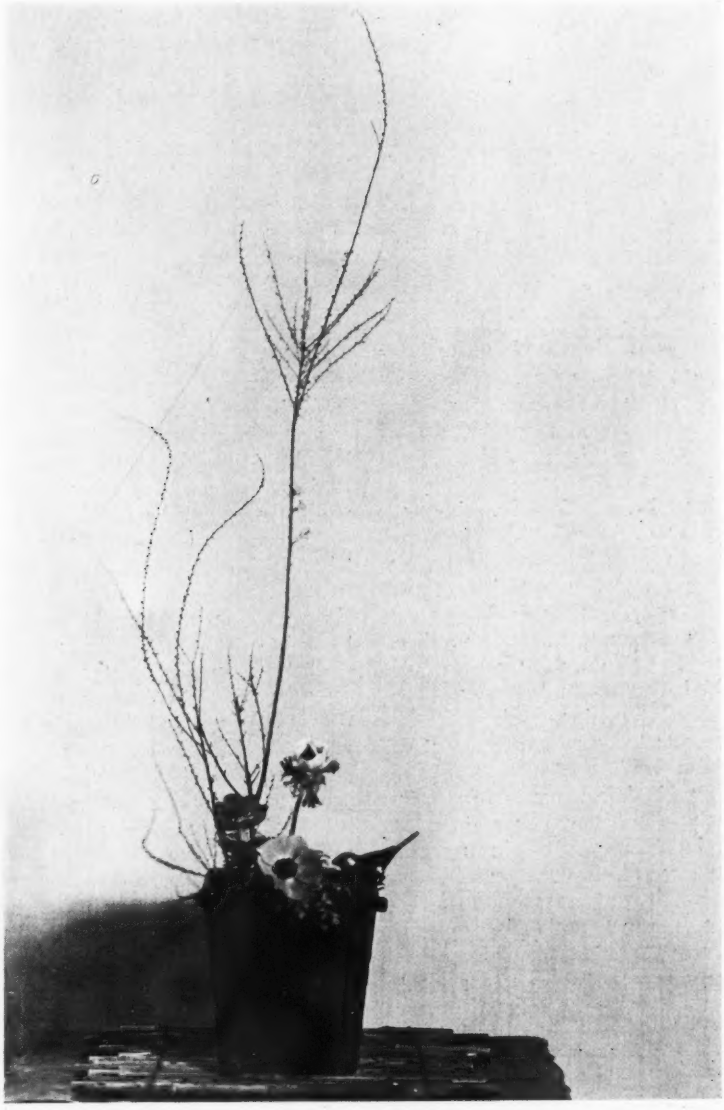
To arrange flowers, a fleeting thing, how comparable to the flying arrow. . . You are able to show so much skill or lack of skill, so much good sense or lack of it.

Peoples here usually think of Japanese flower arrangement as something static, tied down to iron rules and systems. To be sure there have been crystalized in the study of flowers through a mere number of centuries certain good and fool-proof methods, preferences and ways of doing an arrangement that, it appears to the young student, are hardly capable of change or improvement. And yet, they are improved and changed constantly, gradually without destroying the established values.

I think this is a wonderful capacity of the Orient, of Japan especially, this

A small arrangement with jonquils and Siberian squills, Washington Garden Club, Alexandria, Va., April, 1937.

Narcissus Thalia, with white tulips and Ornithogalum thyrsoides in clear glass bowl. Ikko Greger, Alexandria, Va., 1937.



Anemone and Thunberg's spirea.

ability to assimilate the new idea of today. Even if not always successful at the start, the moment any change is able to blend in with proved and established ways, the moment it proves itself worthwhile to be inculcated into the old system, that very moment it has become a part of it. It is one secret of happy, balanced living, this moving along with the flow of the times without burning the bridges of the past. Life itself means to make us richer every day, if we only stay prepared for it.

Most commonly, the clear simplicity of a Japanese flower arrangement, its tendency to be alive and growing in its new surrounding appeals greatly to the observer here in the United States.

I remember an old lady, who came to see the first exhibit of arrangements of my students this spring. She said very simply, more to herself than to me, "Why, yes, these flowers rest me, they are quiet and sure of themselves." But on the day there was also an old lady who said, "Why stones, how silly to put them with an iris arrangement; I can not approve of that." She also applied a measuring stick and found that some arrangements were above or below the measurements given by Mary Averill in her book on Japanese flower arrangement, written more than ten years ago!

Rest is a potential value everyone can derive from the practice of the Japanese way of flower arrangements. Rest through concentration upon a theme where only matter, balanced harmony, the rhythm of the universe and the utmost elegance are expressed in a beautiful medium.

It does everyone a world of good to know a definite way to depart from one's own company for a while.

No matter how many different rules there may be observed, no matter how different, how odd or how lovely the result of such meditation with flowers may be, the essential part is this psychological attitude, which is trained by and derived from the study of this art.

No wonder that this, as a rule, remains unobserved. It is the invisible part of a pleasant occupation. Books and articles on Japanese flower arrangement bring usually information about the mechanics of this art, rules of composition, symbolic significance, etc., etc. To the Japanese, it is so much of a second nature that they hardly give an explanation. As a rule, the traditional teacher in Japan is very meager with explanations and has little use for such because his students bring to their first lesson already a wealth of inherited knowledge. No attempt is made to obtain by intellectual analysis a grasp on what is supposed to be a matter of artistic ability, vision and good taste. Only by comparison with other Japanese aesthetic accomplishments, such as the ceremony of tea, brush-penmanship, poetry, nagauta and by a fair knowledge of the Japanese "kokoro," can one learn of the high standard that has been attained and the great emotional values that have been produced. If practiced, however, it becomes very obvious to everyone who takes up the study of this subject, whether he be Oriental or Occidental.

My teacher once told me of the reasons why men in prominent positions of Japanese public life are usually interested and accomplished in poetry, painting, flower arrangement or tea ceremony. They value such arts as happy chances to escape for a short time from the unsolved problems of life, to return to them with that detached and composed attitude which alone makes their solution possible.

Concerning Hyacinths

B. Y. Morrison

The word hyacinth usually conjures up an image of pots of winter bloom, filled with heavy trusses of waxen blooms that fill the house with their unmistakable scent, or if we are old enough the beds in public parks, remarkably filled with uniform stands of these flowers, perhaps arranged in parti-colored designs as tulips so often were.

Today tulips have escaped from such planting design and hyacinths have almost disappeared in many places, but certainly in this time when there is such a revival of interest in scented garden things, hyacinths should be remembered. Those persons who find their fragrance too heavy in the house might recall that in the spring, with the cool airs, this scent is not so cloying or so heavy.

The one objection that can be levelled against them is that the bulbs one purchases, having been chosen for their size and vigor, begin to break up and give smaller stalks of bloom after the first year. To some this is an objection, to others an advantage. To my own notion, some of the oldest clumps of hyacinth in the garden, that have never returned in their cycle of growth to their original fatness, are among the most decorative of the spring-flowering bulbs.

Since there were no gardens near by where one could look at a collection of named sorts, the inevitable solution for a gardener curious about the fifty or more names that one can find in any good foreign list was to buy them and see what all were like.

Buying from catalogues has always some attendant risks for the material may be too seductively described or it may be set forth in terms so meager that no one could choose a few from many. Hyacinths usually come under the latter category and they suffer also, as do iris and delphiniums, from the too casual use of the term blue. This word standing alone most often suggests to the mind a color in which pink has no part, but blue for hyacinths must always mean a color that tends toward lavender or purple. Pink, on the other hand, is more accurately used in describing hyacinths than iris, for many of the hues would not be hurt by juxtaposition with the purest pinks of other flowers. Even when making due allowance for these color terms, the flowering spikes come in for scanty descriptions.

In a general way everyone knows that any hyacinth in good form bears a stalk from ten to fourteen inches high which is covered more or less densely with starry bells that make a cylindrical mass with a dome-shaped top. This mass may be so compact that the bells are almost interlaced or may be so loosely arranged that the stalk shows through the entire inflorescence.

The bells themselves with their short tubes and six spreading lobes are various in proportions for in some the lobes are so narrow that the whole flower is spidery in form, in others so broad that the flower is almost circular in outline; in some they lie flat so that each flower shows a full face, in others they are so recurved

that the flower is almost globular.

In color, there is considerable variation. Relatively few are exactly the same color all over. Usually the outside is darker toward the base and the inside shows deeper toward the tip and center of each lobe, in some cases so much that the flower appears to be striped.

In make-up there is little variation save between singles and doubles. For persons who never like double flowers, these may not appeal, but for those who enjoy the regular doubling found in a camellia, they will.

Any descriptive listing of varieties is likely to be tiresome and that which follows is not different from its kind. It may serve some other curious gardener for the whole study and it may also point out one or two varieties that are worth discovering. The records are in the usual color groups but the special color notes (capitalized) are from Ridgway's Color Standards and Nomenclature.

DARK BLUE AND BLACK. These in general appearance are deep blue-purples. They are rather much alike and vary chiefly in their time of flowering. The earliest in the garden was *Zulu King,* a very deep blue purple (Dark Violet to Blackish Violet), followed by *Mary* of almost the same hue (Dark Violet fading to Light Violet on the edges as the flower ages). This variety has rather larger individual flowers, set more loosely on a taller stalk. *Duke of Westminster* was the most interesting of this group. The stalks were not the tallest but were stiffly erect with well set flowers, beautifully modeled and rather broad and flat. The face of the flower is a deep warm violet color (Spectrum Violet) which contrasts distinctly with the greenish blue color of the tube (Light Violet Blue). *King of the Blues* and *Indigo King* were very late to open and very dark in color, the former the more red purple of the two, although each must fall within Ridgway's Dark Violet.

BLUE, PALE BLUE AND PORCELAIN BLUE. These colors are all somewhat on the lavender side or else tend toward gray; none were of a color that might be called a blue-tinted white, although there are pale pinks that are almost tinted whites.

Bismarck was the earliest with tall and rather loosely set spikes of large flowers, a warm violet with a darker stripe (Spectrum Violet to Dark Violet.) *Schotel,* which is common enough, was next with pale violet lobes and slightly greenish tube (Pallid to Pale Violet with Mazarin Blue on tube). *Myosotis* that one might hope to be something like its namesake is a very pale blue lavender (between Pale Amparo Blue and White) as was also, the slightly darker *Financier. Dr. Stresmann* one could spare merely because it does not stand out from its fellows. All its points are excellent. The color is a medium lavender darkening toward the center (Pallid Blue Violet darkening to Pale Blue Violet with Light Violet Blue on the outside).

Grand Maitre is the commercial standard of this group and still excellent for a mid-season lavender. *Queen of the Blues* is bluer in effect than either Financier or Schotel because its Light Lavender Blue bells are accented by the greenish Light Cadet Blue of the tube. Dr. Lieber suggests a warm pinkinsh lavender *Phlox divaricata* (Pale Violet), the most pink of this whole group. *Perle Brilliant* was the most interesting of this group since it was most distinct in having a sharp color contrast between the tube and the inner surfaces of the lobes, the outside a fairly deep,

slightly greenish blue (Amparo Blue), the inside almost gray lavender (between white and Pallid Violet-Blue). The spike is tall, the flowers large and well formed.

WHITES. These are very difficult to describe. They differ chiefly in season of bloom, size of the individual flower and height. *Arentine Arendsen* and *La Grandesse* have the larger individual flowers; *L'Innocence* and *Queen of the Whites* the taller spikes. *Mt. Everest* bloomed a little later than the others and I preferred it to Queen of the Whites but not to La Grandesse. *Mimie,* listed as a blush white, is just that and makes a delightful transition to the palest pinks, Gigantea, Gen. de Wet and the double Edison.

YELLOW AND SALMON. Nearly everyone has known of yellow hyacinths but few visitors seemed to know any more of the salmon sorts than I. *Prince Henry* was the earliest with pale yellow flowers on excellent stalks (Sulphur Yellow). *City of Haarlem* was almost a fortnight later with shorter, more closely packed stalks of a deeper yellow (slightly paler than Martius Yellow). *Yellow Hammer* lies between the two in time with more compact spikes that do not always develop evenly. The color is lemon yellow. The two "salmon" varieties are delightful, alike yet quite unlike. *Oranje Boven* looks like a yellow hyacinth washed over with deep pink. *Daylight* is almost a pure salmon pink. (Their colors could not be matched in Ridgway.) It is about ten days later than Oranje Boven. Among their fellows they are small hyacinths but they are very perfectly formed.

DARK RED AND CRIMSON. For the most part these are colors your reporter does not enjoy, since they have the insistence of hue one finds in some bougainvilleas or in Azalea Hinodegiri. *Van Tubergen's Scarlet* is the exception with its smallish spikes of exquisitely formed bells distinguished by their wide lobes that make each flower almost as circular as a good primula. It is a deep purplish rose for which Ridgway's Tyrian Rose is a charming label. The stalk itself is rather coppery which contrasts well with the flowers. The others in order of flowering were *Garibaldi, La Victoire, Gen. Pelissier* and *Rois des Belges.* All are brilliant carmine reds that tend toward pink. (La Victoire is Rhodamine Purple; Gen. Pelissier between Aster and Amaranth Purple; Roi des Belges between Rose Red and Rose Color). All flower among the earliest as grown out of doors, but in the cool spring weather keep well into the full flowering season.

DEEP PINK. The varieties of this section are for the most part as intense and vivid colors as those of the last group and have to be used with the same sort of care. *Imperator* is almost an exact dplicate of *Roi des Belges* but one or two tones lighter (Rose Pink with stripe of Deep Rose). *Mr. Dames,* of the next section, is again almost a duplicate with two tones lighter still. *Moreno,* which is one of the standard sorts, met in nearly any catalogue, is essentially rose pink with slightly lighter edges, and a faint suggestion of yellow that makes any pink more vivid than if entirely a pure hue. *Marconi* is also a pure rose pink but there is no suggestion of a stripe. *Gertrude,* which is so often forced, is characterized by very stiff and erect growth and flowers of a very vivacious pink (between Rose Pink and Pale Rose Pink). *Queen of the Pinks,* which is recorded as a sport from King of the Blues, did not grow well but gave a low, rather crowded stalk and flowers with rather narrow segments. *Queen Wilhel-*

mina gave stalks of only moderate height with a loose spike of moderate-sized but beautifully formed bells of a clear pink that passes almost to white in the center (Amaranth Pink through Rose Pink toward white). This variety, Beauty and Moreno would be my choice among these varieties.

PALE PINK. This section has the most tender colors of the entire pink to red contingent. As has been pointed out, *Mr. Dames,* although listed here, really belongs in the Deep Pink Section. *Nimrod* was the earliest variety with good stalks of pale pink flowers (between Pale Amaranth Pink and white). *Gen. de Wet* is almost a tinted white, slightly deeper than Mimie, mentioned in the white section, (White suffused with Hermosa Pink). The flowers are large and loosely set on the stalks. *Gigantea* makes a very tall spike of rather crowded, spidery flowers of a hue between those of Mimie and Gen. de Wet. *Lady Derby* produces large individual bells well set on the stalk and of a pink that lies between Mallow Pink and white on the Ridgway chart.

MISCELLANEOUS. These varieties caused the most discussion among visitors, some remarks of great praise, others of violent objection. Nearly all liked *Distinction,* which is the parent of Van Tubergen's Scarlet and like that variety save that the flowers are a dark claret color (Dahlia Purple to Blackish Purple). *Sir William Mansfield* grows tall with a densely crowded stalk of spidery flowers of a deep orchid color (Chinese Violet to Matthews' Purple, both colors well represented in iris). *Hon. Mr. Balfour* is the most conspicuously striped of all the varieties grown. The ground color is a pinkish mauve with a darker stripe that becomes more conspicuous as the flower ages, since the ground color lightens in value. *King of the Violets* and *Purple King* were very late, flowering about the same time as Indigo King and King of the Blues in the blue purple section. Each makes very compact, rather crowded stalks. King of the Violets shows many tints until it is well open when it is a deep mauve toned with lavender (Pale Amparo Purple flushed Light Phlox Purple). Purple King gives the effect of a warm blue purple flushed through the center with a warm reddish purple (Bradley's Violet flushed Matthews' Purple).

DOUBLES. Visitors for the most part were surprised that they liked these. Certainly they were excellent for cutting. *Mad. Sophie* has white camellia-like flowers of perfect formation. It is the double sport of L'Innocence. *Gen. Kohler* is interestingly doubled in that the outer six segments are quite distinct and the center is filled with shorter, slightly twisted lobes, an arrangement that appeared even more conspicuously in the double form of *La Grandesse. Prince Arthur,* the double form of Grand Maitre. has all the excellences of that sort. *Codro,* a very late variety, has short, closely filled stalks of very symmetrical, deep violet purple flowers. *Edison* was one of the most vigorous with huge spikes of tinted white flowers (between white and Flesh Pink). *Noble par Merite* is a very symmetrical double with peal lobes of graduated lengths, clear pink in hue (Rose Pink to Amaranth Pink on tips). *Pres. Roosevelt* gave tall loose spikes of rather spidery flowers of pale pink (between White and Rosolane Pink, with a stripe of Pale Rosolane Purple). The inner colors are made more vivid by the slightly yellowish pink of the outside of the tube. *Sunflower* was not very yellow for its color was overshadowed by pink tinting. *Chestnut*

Flower was probably given its name because its colors suggest those of the horse chestnut. Its stalk is good, the flowers are well formed and well spaced (between White and Rose Pink, a tone deeper than the variety Edison).

Some reference has been made to the use of hyacinths as cut flowers. This is admittedly difficult, but there are many old flower prints of mixed bouquets that show it has been done. Here only one type of bouquet was attempted. The flowers were cut and put in water until the stems were turgid. Then all were arranged in a Japanese holder of a good pattern to form a great solid mass, using color as the determining factor in choice of varieties to be associated. For foliage sprigs of ivy were used cut from outside, so that the leaves were tinged with bronze and purple. Doubtless there are other combinations that might be even more happy. If the flowers are put in cool rooms or even on a porch at night, the cut blooms last as long as if they had remained in the garden.

A Book or Two

Gardening on Nothing a Year. By Mary S. Griffith. Hale, Cushman & Flint, Boston, Mass., 1937. 231 pages, illustrated. $1.75.

Any garden books is something of a delusion and a snare. This book is at least half a dozen delusions but it need be no snare, for it is a very gay book, if you like gay garden books. Mrs. Wilder tries to set the keynote in her pleasant introduction with a bow or two for Mr. Beverley Nicholls, who does well enough in rather small doses, and Mr. Julian Mead, who can be taken in somewhat larger gulps. Mrs. Griffith is really not of their ilk. But I shall always maintain that her title is a cheat.

Because when she began to garden on nothing at all she had what appears about a fifteen-room house, a greenhouse, endless terraces, a huge rock garden and other things that must have caused a twinge or two for Mr. Newcome and Mrs. Newlywed who are finished off in nine pages.

Get the book, read it with pleasure and then if you are as mean as any reviewer is likely to become, copy any one of her pet lists, go to a catalogue and see if the cost adds up to any part of nothing a year. Then if you are really mathematical, do a little estimating on the really inescapable expenses she outlines and see if you agree to nothing a year. Then when you come to the parting toast on page 231, sigh a little and urge that the author—well never mind.

A Rose Odyssey. By J. H. Nicolas, Doubleday, Doran and Company, Inc., Garden City, N. Y., 1937. 230 pages, illustrated. $2.50.

This book is quite impossible to review. It is, in brief, an account of what Dr. Nicolas has seen, heard and learned in almost all the rose centers of Europe, together with various asides, opinions and remarks. It is packed with detail, historical and otherwise.

Unlike Mrs. Griffiths' book this is well named for in an odyssey there is always Ulysses.

Design in Flower Arrangement. By John Taylor Arms and Dorothy Noyes Arms. The Macmillan Company, New York, 1937. 117 pages, illustrated. $2.75.

This book is admittedly born of a lecture and had its rise in judging flower arrangements at flower shows. Before this and always, Mr. Arms is an etcher, and even beyond this, he is a follower of beauty.

In writing, Mr. Arms is rather clear and succinct. There are times when one finds him a little arbitrary and given to statements for which some of us would like elaborations in support. He admits, almost boasts, that he is no horticulturist and consistently avoids the discussion of material throughout his book. With delightful immediacy, he brings us to his business, plainly implied in his title, a discussion of design. All these points must be remembered as one reads on.

Chapter Two is devoted to "Fundamentals of Composition." There is first a definition of design which is admirable, followed by a discussion which must be read more than once to gather the fullest implications. First there is the relation of the composition to its surroundings, spoken of as the frame and illustrated by a variety of places where flower arrangements might be set, many of which have no literally "enframing" character. Mr. Arms has difficulty with this later on when he analyses his illustrations. Second there is the design itself, the part composed by the arranger, worked on with his or her hands. Under this head are discussed a number of basic forms that can easily be discerned, certainly when pointed out. Third, and last, Mr. Arms discusses the "structural lines" underlying the composition. These are illustrated in the analyses that follow in diagrams that face the photographic illustrations. To this reviewer, Mr. Arms interpretation some times seem only one interpretation.

The last large chapter, Analysis of Arrangements, is the most interesting, for it represents Mr. Arms' opinions of those compositions he has chosen to illustrate specific points. After reading it, one turns back to read the book over again and with greater pleasure than before. There are various points of which proper criticism might be offered. For example, the discussion of Mrs. Cary's arrangement of lotus hinges on two things, the skill with which the diagonal motives have been used and the lighting. In this case, the lighting appears to this reviewer as a confusing element and the dark shadow in the upper left hand corner a photographer's trick with the same underlying idea that causes engraver's to darken the corners of their plates. It would be a little odd to have hanging dark clouds in one's home, but it does fortify the strength of Mr. Talmadge's photograph, which is by no means the same thing as Mrs. Cary's composition. And so one might continue with comment on the other plates but that would bring this unsatisfactory review to even greater length.

This remains, whatever one's contentions, an important book. It should be read and studied, pulled apart and debated and then read again. Enrichment of vision is sure to follow, improvement in performance will depend, as always, upon the performer.

Rhododendron Notes

Dr. W. H. Camp of the New York Botanical Garden reported (1936) the discovery of a new azalea which occurs in the mountains of Kentucky. It is remarkable for its color, which, although variable according to individual plants, comes in red of a darker color than has ever before been described in an American azalea, being a dark scarlet of almost "black" intensity in its darker individuals. For this reason, plus its probable hardiness, there is every reason to expect that this azalea will be of considerable value, both for its rich coloration and for its possibilities as a parent of hybrids. Although we have not yet heard of its having been named and placed, we understand that it is either a form of the flame azalea, *R. calendulaceum,* or some very closely related species.

It is quite possible that graft union troubles are partly responsible for the unthriftiness of Ghent Hybrid azaleas in America, especially the "dwindling" of young stock. In certain plants examined to ascertain the cause of mottling, malformations, chlorosis and other leaf troubles occurring during June and July, the results strongly indicate that the trouble is caused mainly by imperfect graft relationships, although the symptoms resemble those of virus disease. In this instance, however, a virus disease seems not to be indicated. It is thought that these azaleas, being always sensitive to lack of water, are unable to obtain sufficient moisture from the soil during dry periods owing to an unhappy combination of stock and scion. In America, where our dry summers are difficult for azaleas to endure, it is suggested that own-root stock might prove more successful than grafted plants. Experiments at the Boyce Thompson Institute already indicate that the new growth-promoting substance discovered there offers real possibilities in aiding the propagation of own-root azaleas.

Will anyone who has or knows of a pure white form of *Rhododendron minus* please communicate with the Chairman of the Rhododendron Committee?

It is always interesting to study the methods of people who succeed in growing rhododendrons and azaleas in regions where these plants are seldom successful. Mr. Ernest N. Stanton of Grosse Ile, Mich., has been experimenting with ericaceous plants for fifteen years and has successfully grown most of the hardy American rhododendrons and azaleas as well as the hardy hybrids, despite highly unfavorable soil conditions. The soil is alkaline to start with, but the chief difficulty with rhododendrons is in maintenance, for the water used for irrigation approximates pH 8.0 and quickly neutralizes a peat bed which may have tested pH 3.5 when it was first established. As the growing of ericaceous plants, under such conditions, necessitates the constant use of acidifiers, it has been exceedingly expensive in the past, so Mr. Stanton has devoted considerable time in an effort to devise an inexpensive method suitable for his conditions. Aluminum sulphate, even when used in large quantities, has proved unsuccessful and the plants treated became chlorotic. Crude tannic acid or tannin, mixed with fine-ground peat as

Lilian A. Guernsey [See page 198]

Rhododendron indicum var. Kin-no-zai

Lilian A. Guernsey

Rhododendron Schlippenbachii

a spreader, was very successful for maintenance of acidity when broadcast at the rate of one pound per square yard of surface, writes Mr. Stanton, but proved expensive. The most practicable acidifier in Mr. Stanton's experiments appears to be sulphur, mixed with the soil when planting and also when broadcast upon the surface at the rate of four ounces per square foot. But there is a curious commentary here: When the sulphur was first applied to soil which had previously been heavily treated with aluminum sulphate, the three- to four-foot rhododendrons were killed within a few days after the application of the material, the control plants continuing normal growth. Attempts to duplicate these results since have failed and the sulphur is giving no trouble, used with or without tannic acid. Although the conjecture is at present unverified by him, Mr. Stanton believes that the aluminum sulphate used heavily on the plants shortly before treatment with sulphur had something to do with the disastrous results. There have been other cases of supposed sulphur toxicity. Could it perhaps be aluminum toxicity in this instance? We are indebted to Mr. Stanton for this data.

The Rhododendron Committee welcomes news items and brief observations which may be of interest to those who grow azaleas or rhododendrons. An effort will be made to use this column as a clearing house for current horticultural information on the subject.

CLEMENT G. BOWERS, *Chairman.*

The Gardener's Pocketbook

A last year's note on *Lycoris Squamigeri* and a this year's comment.

August 20, 1936—The flowers of the *Lycoris squamigera* are now just going out of bloom. Though devoured by the Japanese beetle this year they had a day or so of beauty, when their bare stems of a foot and a half were veiled with the spreading wiry branches of the Sea Lavender—its clouds of tiny pale blue flowerets enhanced the bluish lavender pink of the *Lycoris*.

I have had great success with these rather unusual "lilies" since planting them with a quantity of daffodils in a bed that grass is allowed to grow over while and after the daffodil leaves are ripening. The planting with the daffodils was a bit of luck, for I had forgotten the one bulb of this species that I owned was in the bed with this planting of narcissi "Apricot", an old variety, but one of which I am fond, liking its narrow pale apricot trumpet and its scent of violets. These bulbs had become very crowded, so were dug and divided. There had been remarkable increase and as some were wanted for the New York Botanical Garden planting, that was then being done by my old friend E. A. Peckham, some were sent to her, some given away and the rest, reset in the same spot. At the same time some much larger bulbs that I thought might be some old Empress or King Alfred, dug at the same time and same spot were replaced.

Not that the Lycoris bulb resembles a daffodil, for it is much larger and its skin, as I remember it, is different, but I was very weary as that re-planting was completed, so this is the explanation I now make to myself.

The following spring, some very large strap-like leaves appeared in that planting, but as in August I was away, no flower stalks were noted. The next year there were eight stalks coming up one hot day through that rough grass and this year eight again. The sod covering is good for them evidently. Last week I was given one in a pot, with the leaves then appearing. It makes me doubt it is a Lycoris, but was given me as a white "Hardy Amaryllis". It gives me more doubt as to how to treat it now, for if I plant it, with its leaf growth as at present, what season will it consider it wise to bloom, next May, when it normally should be sending up only leaves, will it reverse itself and send up flowers? I wonder.

July, 1937—Alas! this May it sent up neither leaves nor flowers, it simply did not appear at all. And yet, I have not given up hope, sometimes they lay dormant a year. And I dare not dig down to see how it fares, as my luck would be to pierce it through. It was planted very carefully and ripened those leaves all right last Autumn and was mulched with manure and sheltered by a huge box bush. And it is also some weeks until August 14 which is the date of the flowering of its mates, when it may send up leaves once more.

Once I saw a happy planting of these strange bulbs, in Miss Marion Case's delightful place outside of Boston. They were placed at the edge of a wood, on a woodland path, and ferns sprang up about them thus concealing those bare weird stems which to me are really quite ugly. I did not ask about the soil, but should think it would have to be rather on the light side with sand as well as leaf mould, to keep them from getting too soggy and rotting in winter which must be very severe up there.

Though called Amaryllis they are only in that Natural Order botanically speaking and are of a genus containing but half a dozen species. John Weathers says Lycoris—name of a woman in Roman history—and stops abruptly. One should look up that allusion, but one always thinks of Lycoris in the dog days of July and August when it is really too hot to delve into Roman times. Weathers says the bulbs are not quite hardy except in the mildest parts of the Kingdom as he quaintly calls his country, but will flourish in the open air south of the Thames in warm sheltered borders in well drained gritty soil. *L. squamigera* is a "striking Japanese species and may be grown outside in the same way as the Madonna Lily."

F. E. McIlvaine.

Downingtown, Penna.

Rhododendron indicum var. Kin-no-zai (See page 194).

One always wonders why curious or monstrous flowers are saved. This tendency for the production of a corolla slit to the base and narrowed to mere ribbons is reasonably strong in azaleas but the Japanese have been the ones who have specially preserved the varieties and kept them for garden use.

This curious variety belongs in the same group of cultural forms as the variety Beni-kirishima, illustrated on page 147 last quarter, but it differs in other ways than its aberrant corolla. In general the growth is less robust, with lower stature, more laterally spreading habit, finer twigs but rather similar foliage. In that sort the flower had doubled until there was scarcely more than the pistil that was not petaloid; in this sort all the parts are normal save the corolla that is reduced to five almost thread like petals. When the plant is mature enough, these curious flowers are produced in sufficient abundance that they make a warm red glow through the foliage but never the conspicuous masses of color one is likely to expect of an azalea. Like other members of the *indicum* groups, this plant flowers late, here in June, but it is by no means the last of its group to open.

In this region, where all are fairly hardy, suffering no more than any other evergreen azalea, this sort seems one of the farms least likely to be caught by frosts that split the bark.

Like all members of its group it is easily trimmed, even clipped, and it would not be impossible to follow the Japanese methods and train special branches into picturesque outlines, or even to use this plant as an evergreen cover for areas where one need never walk.

There are other variants of this group that are worth recording and these will follow in later issues.

Washington, D. C.

Brodiaea coccinea (See page 199)

The genus Brodiaea has had many inclusions and exclusions in its life. This plant is now referred to as *Brevoortia Ida-Maia* because of its "long-tubular and 6-saccate corolla" (Bailey). If it has but three stamens and three staminodia, what matter, for so do some plants that remain brodiaeas. As it stands in Brevoortia it stands alone with no fellows, so why not return it to its kin?

Although its range is reported as northern California to Oregon in wooded foothills, this has been the least permanent of the group. Not all of newly purchased bulbs make an appearance and those do usually flower once and depart. Every attention has been showered on it in the way of soil and passing shade but nothing persuades it to remain.

The illustration shows well enough

Lilian A. Guernsey

Brodiaea coccinea

[See page 198]

the flower head with its large and brilliant crimson red corolla with tips of bright pea-green. No two stalks ever came into flowering at one time, so a single stalk is all that can be recorded. Washington, D. C.

Cypella Herbertii (See page 201)

In this year of 1937, when followers of the late Dean William Herbert (1778-1847) are celebrating the 100th anniversary of the publication of Herbert's important pioneer monograph "Amaryllidaceae," it is not unfitting to cast a glance at one of the plants bearing the good Dean's name.

Cypella Herbertii is one of the Iris family, and a dainty and beautiful flower, well worthy to carry the name of Herbert as its specific determination. The specimen shown in the photograph was raised from seed obtained from England two years ago, where the plant is still in occasional cultivation. The writer has never seen it listed in any American catalogues.

It is a cormous plant, something like a miniature tigridia in foliage, and more or less evergreen under Florida conditions. The main season of bloom seems to be in June so far as observed.

The corm is like that of a freesia, in shape, but sometimes round and occasionally oval in different specimens. The corm of the specimen illustrating this note was not more than ½ to ⅝ inch in diameter. They grow excellently in a medium sandy loam or compost, enriched with some old well-rotted cow manure, and about neutral in reaction.

The flower resembles that of a tigridia, but is smaller, three to four inches across, and an apricot-creamy yellow to the casual eye. The photograph shows the interesting configuration of the center of the flower, which reminds one also of a marica, close botanical relative of cypella. The individual blooms are ephemeral, as with the tigridia, opening in the morning and closing late in the afternoon, but there is a succession of flowers for two or three weeks from the same plant.

The cypellas come from southern Brazil and are probably as tender as freesias or babianas. They do not seem to require lifting or digging in ordinary culture as do most of their iridaceous relatives.

WYNDHAM HAYWARD.
Winter Park, Fla.

Crocus speciosus (See page 202)

One has a certain hesitation in making a special note about this familiar autumn-flowering crocus species, that has been so long in cultivation but which is not so often grown as it should be by the ordinary gardener who thinks nothing of having his spring crocus in half-a-dozen named sorts. Year after year, in late September, gardeners who should know better stop in new amazement before its regularly increasing clumps of flower.

It belongs, of course, to a section of the genus that flowers without leaves, the fat white shoots pushing up in the autumn and then sending up their slender buds so often paler than the full-blown flowers themselves, with their brilliant orange-scarlet stigmata.

Mr. Bowles points out in his indispensable book the brilliance of the blue tint that overlies the lilac coloring and describes the fineness of the venation that carries this coloring over the surface of the petal.

Aside from the typical form there are many variants. Here the white form has not been as vigorous as the type but it is lovely enough to be patient with. The late flowering varieties *Aitchisoni* with pale blue lavender flowers and *globosus* with rounder

Cypella Herbertii

[See page 200]

Michael Carron

Crocus speciosus

[See page 200]

Lilian A. Guernsey

Muscari comosum

[See page 204]

deeper blue violet flowers are almost as vigorous as the type and almost as prolific.

As compared with spring-flowering species these have given few seedlings, which is a matter of keen regret. Although it may not be as necessary as for some other species, these are planted in a bed where both sand and peat have been added until there is a firm but well drained soil in which heathers take delight and the charming *Viola pedata* is almost as luxuriant as in its native homes.

As the weather is usually fine here in late September, the *speciosus* crocus usually come through unscathed. A light frost injures only the oldest flowers but a sudden rain will dash the blooms against whatever ground cover there may be. Here it is little, but a rough shelter of heather usually makes a shelter for the later buds as it does for the earlier flowers of *Crocus iridiflorus,* which also deserves its meed of attention.

Washington, D. C.

Muscari comosum (See page 203)

Although the monstrous form of the plume hyacinth, known commonly enough as the feather hyacinth, appears in gardens at various times, one less often sees this type with its very different appearance. This plant grows with wider leaves that more nearly resemble those of a hyacinth than many muscari, and strange stalks of flowers that elongate rapidly as they mature the lower flowers. As the flower stalk rises, it has a constantly changing appearance, for the flower buds appear closely packed on the stalk and grow away from it as their pedicels elongate until one has a tall stalk bearing for the greater part of its length rather dull olive to greenish flowers and at its tip the clear bright violet sterile flowers that make a corymb-like crest to the whole. In these latter the color of the pedicel is the same as the color of the flower itself, so that it apepars like a violet tassel upon the darker column.

Here the fertile flowers have shown some change in color, lightening toward yellow as they age but never approximating the hue in the flowers of *M. moschatum,* the musk hyacinth.

The bulbs arrived too late in the autumn of 1936 to be planted out-of-doors so they were potted and kept in a cold pit. In the early spring, they were taken from the pot and placed in the border plot with no apparent interruption in development. From their behavior in the pit house, it would seem likely that they would not make autumnal foliage growth.

It is too soon to know their rate of increase by offsets, but the flowering stalks set many capsules, which seem to bear most often two dull black seeds in each of the three cells. With this, one probably can increase a stock, since there appear to be as many as thirty-five flowers to the stalk.

In a mixed bouquet in a flower show this strange plant stole the show from many a flower more orthodox even in the luxuriant blooming of late May, when all the earlier muscari of more conventional forms have long gone.

Rosa rubrifolia glaucescens (See pages 206, 207)

The *Rosa rubrifolia glaucescens* is a striking plant because of its colorful leaves which from the distance look red or rather soft wine-colored. The bush is a native of the mountains of central and southern Europe, but has made itself quite at home in my garden, where it self-sows almost like a weed. The shrub is upright and elegant, and grows to six feet and more in height. When several are planted

together the effect, especially in early June, is of a dark red color note and they are a striking foil for the grey leaves of the herbs grown in front of them. The stems are a deep rose red and the young growth has a bloom on it.

There are no thorns except the thorn-like hairs on the pedicels of the flowers.

The compound leaves are composed of five ovate elliptical leaflets, each two and a half inches long, of a soft green color shot through with red and fringed at the tips. The odd leaflet at the tip is one inch long. The stipules are often a deep red.

The flowers open the end of May and keep on into June. They grow in clusters of four at the tips of spur-like shoots that rise all along the old stems. They are unique in the fact that here Nature, always the impeccable artist, has made one of her few mistakes in color blendings and somehow the color of the flowers does not seem to belong to the leaves. They ought to be much paler. Their color in Ridgway is either an "Amaranth purple" or "Spinel pink." The leaves are something like "Corinthian pink."

The fruits come by the end of August and are in clusters and a bright orange red, like a tomato. They are a smooth shiny surfaced plum shape three-quarters of an inch long and half an inch across, and very showy.

The *Rosa rubrifolia glaucescens* is subject to "black spot" and has to be sprayed quite frequently.

HELEN M. FOX.

Peekskill, N. Y.

Campanula glomerata (See page 208)

In some plant families where some of the choicest and most delicate are most fragile, there are other members robust enough to satisfy any gardener and yet not so coarse as to be merely somewhat better than weedy. As anyone knows, there are campanulas of sorts, annual, perennial; fragile, robust; delicate, coarse; refined, weedy.

This species just escapes the less pleasant adjectives. The plant itself is coarse and hairy to the touch. The leaves are dark and opaque. The flower shoots rise stiffly from the basal rosettes. The flowers are crowded often times at the axils that bear them, but they are well shaped and of a purple color that has few exact counterparts. It is the sort of color to which one returns, even those who are most offended by it. If one asks these persons why they do not like it, they are rarely articulate. One's suspicion is that the offensive detail is not the color itself but the surface quality of the corolla. Had this been velvety in surface, or had the petal tissue been translucent, this had been a gem.

If clear pinks, clear grays, even chalky whites are near it, it appears a much lovelier flower than it is. It is, moreover, a plant that should be considered in a garden where the color scheme can easily become too tender, too delicate; as a variation from the strong colors that lie in other portions of the spectrum.

Allium stipitatum (See page 210)

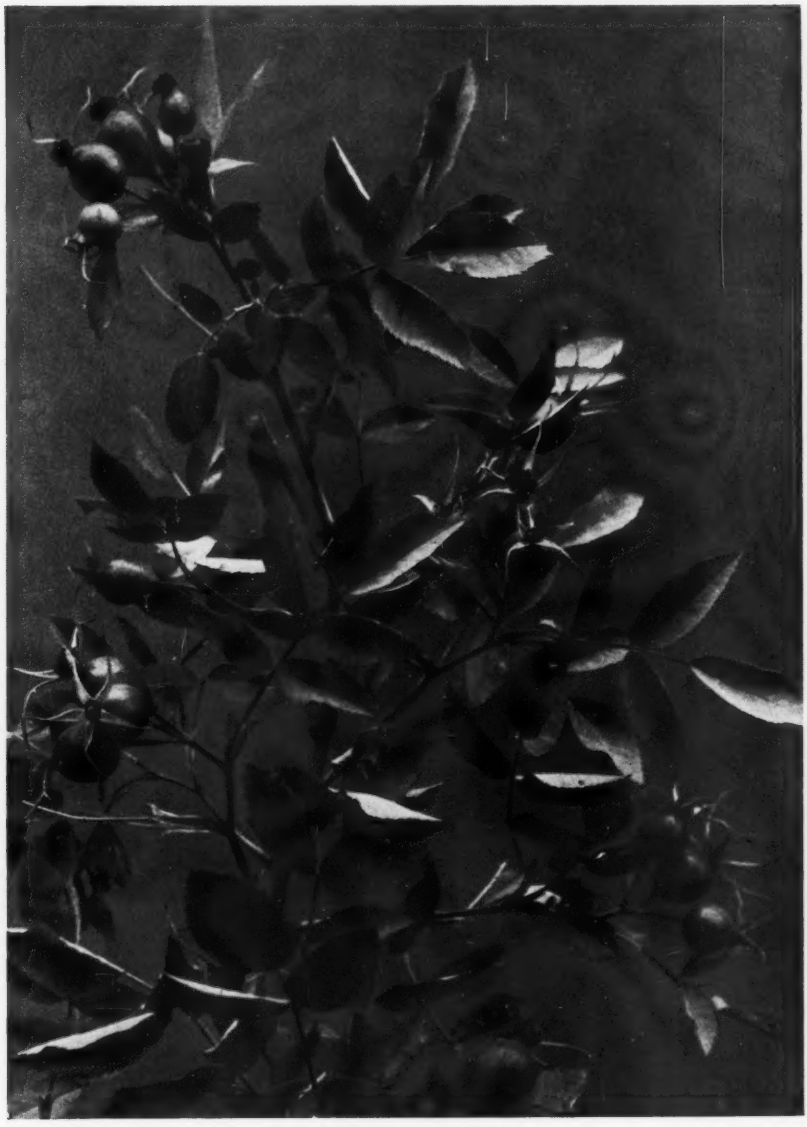
Of alliums there are no end or almost no end and beside that great middle group that have flowers of an indeterminate dull pinkish lavender, there are both excellent and pestiferous species. Usually we have been content in this journal to make illustrations only of the more charming sorts, but some creep in unawares to the undoing of all.

This species, of course, comes into immediate condemnation because it bears in its very decorative head not flowers but bulbils which in the fashion of our common weedy garlic fall

Walter B. Wilder

Rosa rubrifolia glaucescens

[See page 204]



Walter B. Wilder

Rosa rubrifolia glaucescens in fruit

[See page 204]

Lilian A. Guernsey

Campanula glomerata

[See page 205]

on the ground and spring up a thousand fold, taking the garden before one knows it, recalling all the multiplier onions and tree onions of the other side of the garden. The fact remains, however, that the developing inflorescences are more than decorative and show the most interesting growth as they slowly move from the sheathlike positions to the vertical one with the constant widening and whitening of the bracts that stretch taut over the developing bulblets.

Here the plant is never exiled because it came from a special garden, but no opportunity for spread is ever allowed the fruiting stalks, for they are cut down and destroyed before a single bulblet can escape from its sheath.

Allium caeruleum (See page 211)

It seems very curious that so charming a plant as this has not found a permanent place in gardens. It presents no particular difficulty of culture and does not spread quickly from the root nor make bulbils in the head except in rare cases. Seed is produced abundantly enough but the head can be cut off while green so this means of spread is destroyed.

The species is not new. It is described in the appendix to the second volume of Pallas "Physicalische Reise durch einige Provinzen des Russischen Reichs" apparently made in 1771. It is brief enough with a rather unflattering figure. Of the description all the details seem correct save the color, for which is given, *dilute coerulea.* As our plant has flowered the color is deeper than what I should call pale blue. It is not safe to trust to color memory but if I were forced to guess to which sheet of Ridgeway to turn, I should chose Plate XXXV with some accent to these gray-blue lavender from Plate XXIV.

The plant has not been tried in a great variety of situations, but in enough to show that it does not tolerate over much shade and crowding and that in full sun its leaves begin to wither away, in the fashion of arid-soil plants, before it finishes its flowering much less its fruiting. Somewhere between these points must lie its preferred habitat, probably nearer the dry end of the series.

As it increases it makes slender clumps of narrow foliage that ripen and disappear before July leaving a bare stalk with drying seed head unless these are cut off.

Clethra alnifolia

Clethra alnifolia, called white alder, is native along the sea coast in sandy soil and bright sunshine, from Maine to Florida. It is one of our best shrubs with its stout green leaves and spikes of deliciously scented flowers but its greatest charm is that it blooms in July and August.

The old bushes in the border are quite large, being seven feet high and as much as ten feet across. The shrub is much-branched and leafy. The stems make thick woody clumps and the bushes should be dug up and divided when they get too thick. The stems are brown and striated irregularly. The flowers are borne on the new shoots from old wood.

The leaves are alternate, spatulate, cuspidate at tips with denticulate margins, and of a dark rich green color above. They are four inches long and one and one-quarter inches across, and smooth above and below.

The flowers are borne in terminal spikes seven-eighths of an inch long and are a creamy white. The dark-gold colored anthers on the numerous exserted stamens make the spike look creamy from the distance. The fra-

Lilian A. Guernsey

Allium stipitatum

[See page 205]

Lilian A. Guernsey

Allium caeruleum

[See page 209]

grance is rich and strongly reminiscent of tuberoses. The flowers are arranged thickly around the stem of the spike and are subtended by leaf-like bracts. They have short white stems and white calyces. The calyx is united at the base and then separates into five ovate sepals tipped with cream. The five white petals forming the corolla are crepey-textured and turn in along the margins. There are ten stamens of uneven lengths that stand up straight in the corolla. The white pistil with its three parted stigma extends beyond the exserted stamens. Each little flower is one-half inch across.

The branches, when cut, keep for a long time indoors.

The shrub is cool-looking with its lush green leaves and spires of fragrant cream-colored flowers, but it is a rank grower and belongs in the semi-wild part of the garden.

HELEN M. FOX.

Sprekelia formosissima (See page 213)

This is an interesting and exotic-appearing bulb of the Amaryllis family, native of Mexico, which deserves to be more widely grown. The culture is of the easiest, and the bulb may be stored dry for five or six months of the year without injury.

The exact hardiness of the plant is uncertain, but as the main foliage is produced in the late spring and summer, it might prove to be able to survive outdoors in the ground anywhere the ground does not freeze more than a crust in the winter. It is usually classed as half-hardy.

The bulb is like that of a Hippeastrum but smaller, and the leaves are flat and linear and a bright, glossy, yellowish green. The flowers are produced normally in the early summer contemporaneous with the leaves. For convenience the writer has for years handled the bulbs by planting them out in the open ground in Florida about May 1st, and digging them in October or November when the foliage has begun to mature.

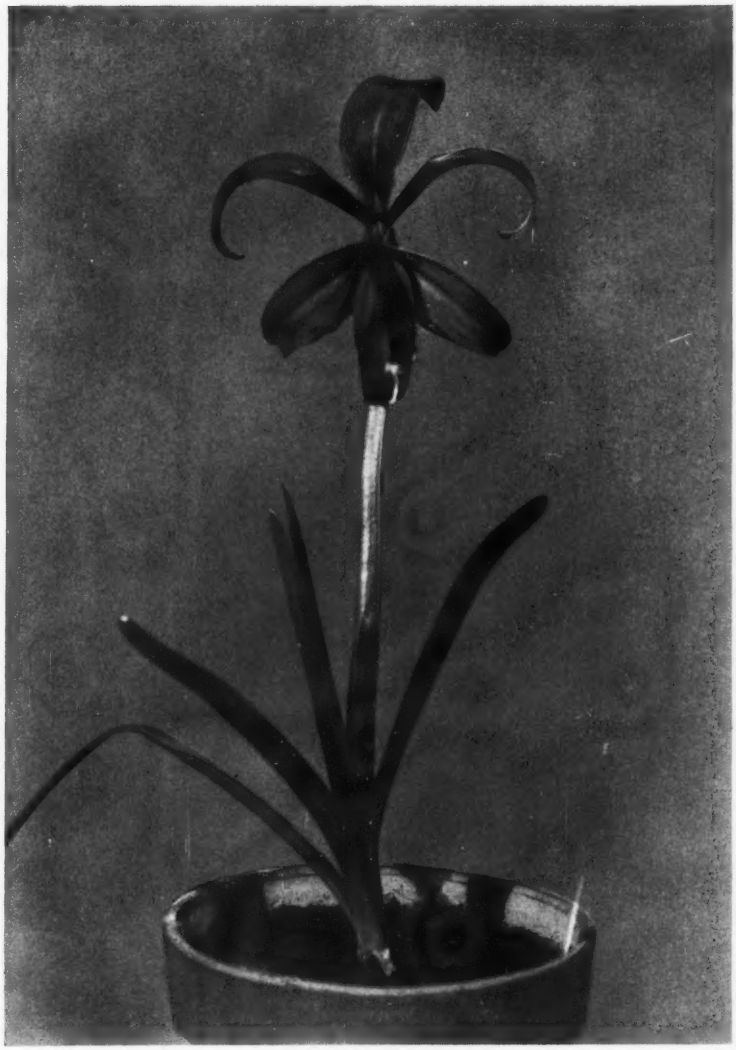
Leaf growth starts promptly after planting and in three or four weeks the blooms appear on scapes from one to one and a half feet tall. The flowers are up to five or more inches in widest diameter, depending on the vigor of the bulb and the success of the culture. They may be self-pollinated to set seed, which are black, flat and shiny, sometimes more or less slightly wedge-shaped. If sowed promptly they will usually give good germination. It takes several years to obtain large bulbs from seed, as the growth is slower than with hybrid amaryllis (Hippeastrum). Two inches diameter is the usual maximum for mature bulbs.

The bulbs are easily grown in pots with satisfactory results, and can be dried off in the pots in the late fall. In the warmer parts of this country they are often left undisturbed in the ground for years.

The curiously curved and waved petals give this flower a charm and distinctive appearance comparable only to an orchid. In Mexico, it is said, they call this plant by the homely phrase "pato de gallo," or "chicken foot," which is at least understandable if unpoetic.

The color is a deep flaming red, varying in some types to a bright scarlet. Burbank at one time advertised a hybrid between a Sprekelia and a Hybrid Amaryllis. The writer has repeatedly tried this cross, however, and has obtained seed a few times, but the seed have never germinated when planted.

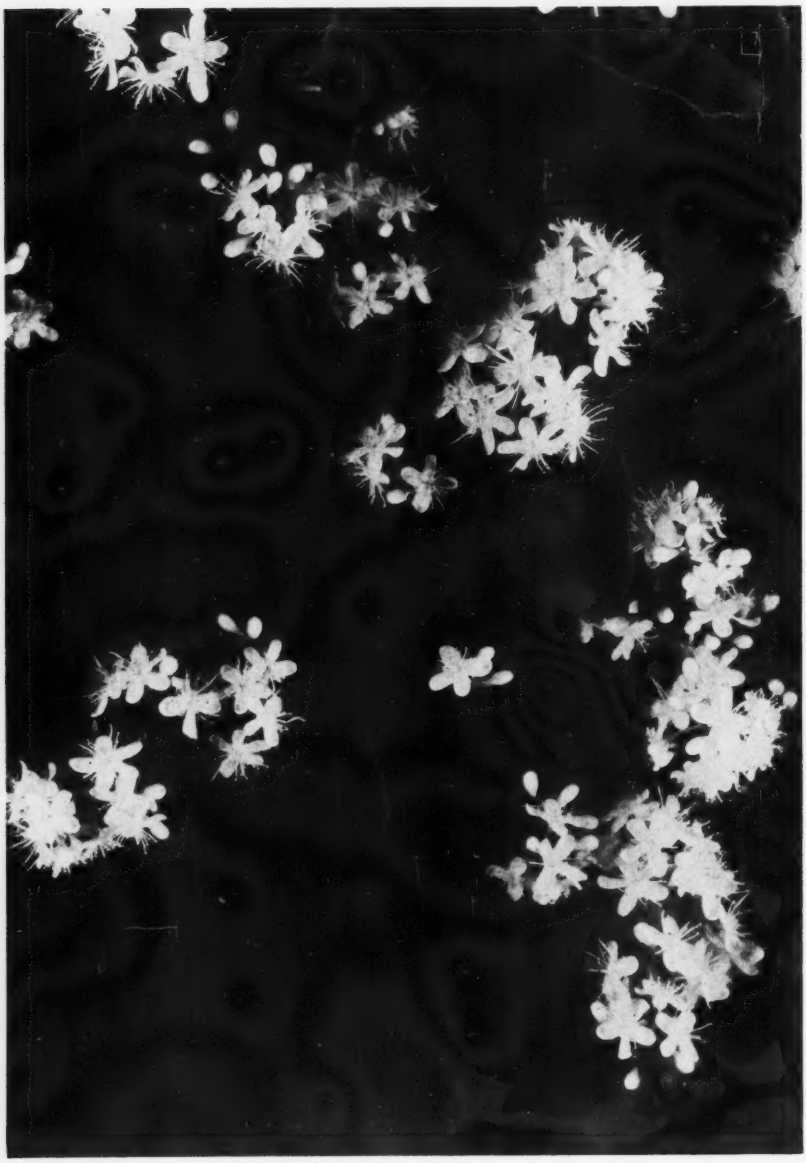
WYNDHAM HAYWARD.
Winter Park, Fla.



Leon A. Page

Sprekelia formosissima

[See page 212]



Lilian A. Guernsey

Symplocos paniculata

[See page 216]

Lilian A. Guernsey

Iris Gatesii

[See page 216]

Symplocos paniculata (See page 214)

The fruiting of this handsome tall shrub or small tree was recorded in this magazine for October, 1936, but it was not until this spring that a branch was caught in time for the photographer. So many shrubs that are really distinguished in their fruiting are less so in their flowering. One thinks quickly of various cotoneasters that are gorgeous in the autumn but rather innocuous in the spring; of viburnums whose illy-scented flowers give no suggestion of the gorgeous fruits to follow.

The symplocos is no such plant. Its branches are lined with shortish panicles of charming white flowers that make one think first of all of hawthorne or some other rosaceous plant, a thought that must have come to the botanist who called it *S. crataegoides.* Even if no brilliant and unusual colored fruits were to follow, these would make of it as fine a tree as one might need when there is room for so ample a plant.

Iris Gatesii (See page 215)

The iris that furnished the photograph for our illustration is perhaps the only flower of this species we shall ever have an opportunity to record, for by no trick or device so far has it been possible to make such iris really happy.

The rhizomes came late in the autumn and were planted in a cold frame. Perhaps because of the late planting they were slow to start but finally pushed up narrow leaves that had fewer falcate forms than most.

Only one flower stalk appeared, a vigorous two-foot unbranched stem with a terminal flower head. The valves were green and rather inflated. From within them slowly appeared the darkish bud that belied the pearly loveliness of the developed blossom.

In actual size, each standard measured four and one-half inches wide, five inches high; each fall, three and one-half inches wide and three inches deep. These measurements do not include the haft in either case.

In color the flower is essentially white with the tint given it by various venations and dottings. On the standard these are a delicate lilac (Purplish Venaceous of Ridgway). The falls are similarly marked but the venation is so much more delicate, so much more widely traced that the hue is not so deep.

The thin, diffuse beard is made up of fairly long hairs that are the Dark Olive Buff of Ridgway turning at their base to Purplish Venaceous.

The flower is so huge, so apparently, though not really, fragile, that one's pleasure in it is very largely the pleasure of wonder and amazement, once seen and forever to be admired, infinitely more interesting than its nearest relative, *Iris Lorteti,* which is a most exquisite iris in itself. This last is an opinion in which the late Mr. Dykes would not concur if we accept his statement in "The Genus Iris" (p. 118) where he expresses his preference for *I. Lorteti.* This latter, in my opinion, may have brighter color, but this is hardly compensated for by the poorer form.

Indigofera Potanini

Indigofera Potanini is a shrub from China. It grows to five feet high and bears its dainty unobtrusive flowers all summer.

The stems are pale tan in color. The leaves are opposite and compound like a delicate version of the laburnum's leaves and have seven leaflets on a

Lilian A. Guernsey

Iris Bungei

[See page 218]

peticle, clasping the main stem at its base.

The leaflets are covered with a velvety bloom and are oblong. The one at the terminal point is the longest and is one inch long and one-half inch across, and has a spine at its tip. The others are shorter.

The flowers grow in spikes two and one-half inch long and each of the pulse-shaped flowers is one-quarter of an inch long. The flowering spike rises from the leaf axils. The flowers are two-lipped, very gaping, the lower lip being divided into three, of which the central one is very concave. The upper lip is also concave. The flowers are a pink-lavender color, and there is a lavender bloom on the unopened buds.

In the back of a border the shrub is like a mist of pale pink bloom and keeps in flower from June until frost. The shrubs have proven quite hardy with me, as has the closely related *Indigofera amblyantha.* Dr. Bailey says they can be propagated from seeds and cuttings. They seem to like growing in the shrubbery in clay soil and in a sunny situation.

Indigofera amblyantha has flowers of a quite vivid rose and is of a prettier color than *Indigofera potanini,* for there is no tinge of lavender in them. The bush is smaller and chunkier, and the leaves a darker green.

HELEN M. FOX.

Iris Bungei (See page 217)

It may be premature to report on this species which is flowering now for the first time, but its abundant flowering cannot be denied. It makes one think of our old friend *Iris ensata,* but this flower is larger and more ample as well as flushed with rosy purple. This is by no means an accurate description, but it is the thought that first comes to mind on seeing the flowering clumps.

The plant makes a dense, wiry tuft of very tough foliage, suggesting that of *ensata* in all but its color, which is greener, though not so green as that of *sintenisii,* which our plant also suggests in some ways.

The illustration gives the exact size of the flowers, so it can be seen they are more ample than those of either species mentioned. The relative colors are suggested, but the hasty record taken does not show the Ridgway colors, only the note that the standards are flushed with rosy lavender and that the falls recall the hues of *sintenisii* rather than those of *graminea.* As yet there has not been time to see if this clump will seed nor what shape of seed or seed pod may be; indeed, there is not even time to determine how well this species from Mongolia, where there is relatively little summer rain, will endure the changing climate here, although having been raised from seed, it will doubtless endure whatever may happen hereafter.

Like that of some other apogons, seed of this species germinates well enough but the little seedlings which are more than "slender" take their own time before they decide on growing with vigor or making any sort of plant. Especial care must be taken that the newly germinated seedling continues in growth without interruption for just as long a period as possible and does not slow down when very small, as then it is likely to be lost either by drying out or by heaving in the ensuing winter. On the other hand, watering must not be overdone or the plant may decay. Such, however, is the usual problem of the worker with rare seeds.